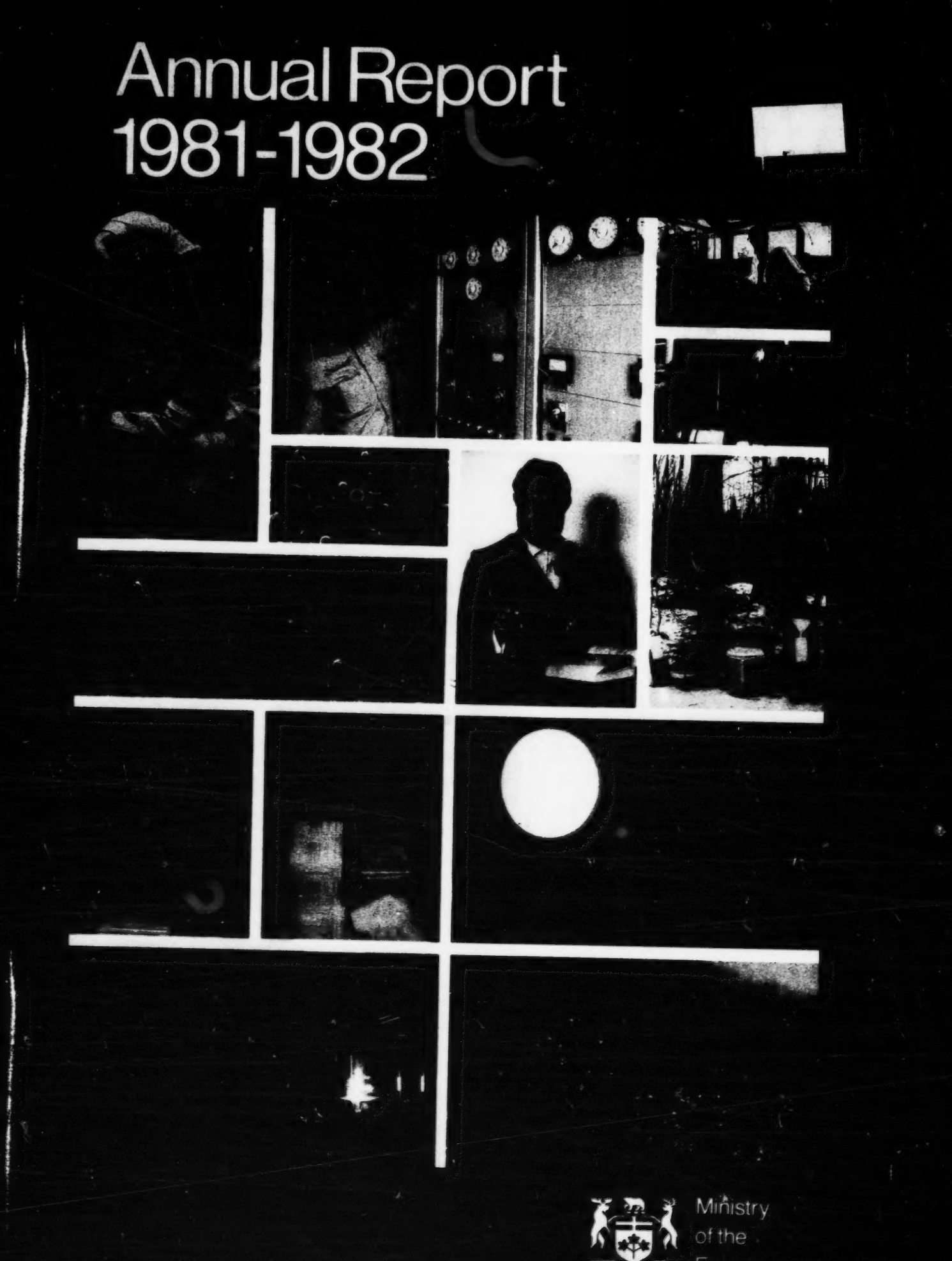
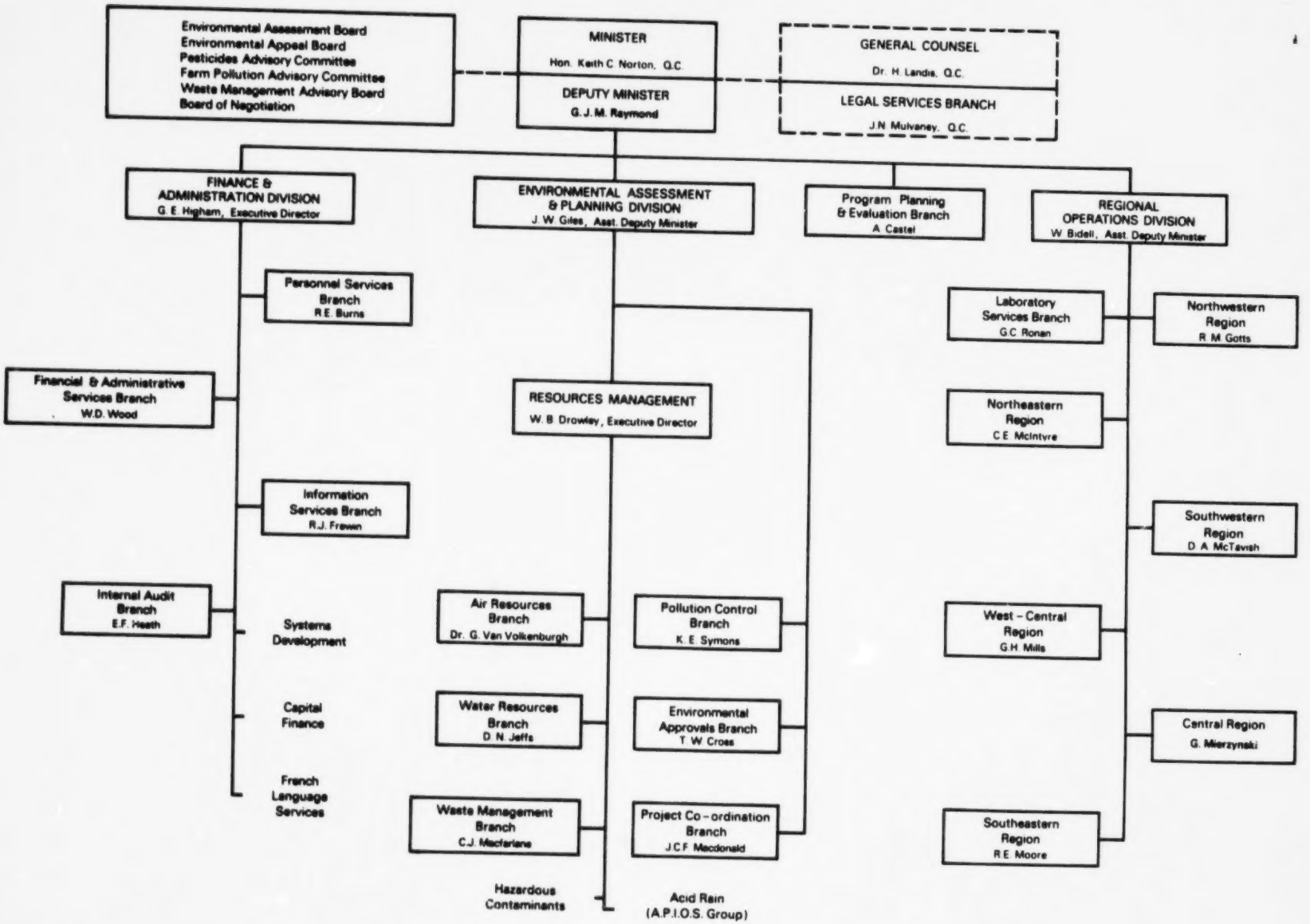
Annual Report 1981-1982



Ministry of the

MINISTRY OF THE ENVIRONMENT – April 1, 1982



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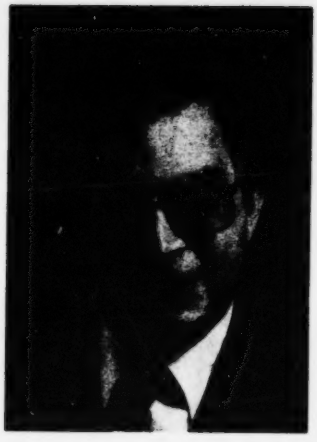
Ce rapport est également publié en français. On peut en obtenir un exemplaire en s'adressant à la librairie du gouvernement de l'Ontario ou aux bureaux régionaux ou de district du ministère de l'Environnement.



To:

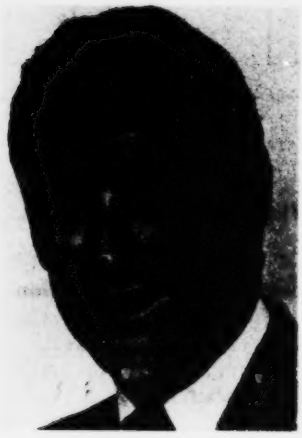
The Honourable
Keith C. Norton, Q.C.
Minister.

Sir,

I have the honour to submit for your approval the annual report of the Ministry of the Environment for the year 1981-82.

Respectfully submitted,

Gérard J.M. Raymond,
Deputy Minister.



To:

His Honour,
The Lieutenant-Governor
of the Province of Ontario.

May it Please Your Honour,

I have the privilege to present the annual report of the Ministry of the Environment for the fiscal year beginning April 1, 1981, and ending March 31, 1982.

Respectfully submitted,

Keith C. Norton, Q.C.
Minister.

Minister's Message

The Ontario Ministry of the Environment was established on April 1, 1972 when the various units of environmental protection, which then existed, began operations under one administrative roof.

As the Ministry begins its second decade, it is my privilege to serve the people of Ontario as the Minister of the Environment. As I look back over the first ten years of our Ministry, I acknowledge, with great appreciation and pride the contributions made to environmental protection by my predecessors, James A.C. Auld, George C. Kerr, William G. Newman, George P. McCague and Dr. Harry C. Parrott.

Under their leadership, this Ministry and its staff made substantial advances in many areas, including these milestones:

- the air quality of major cities throughout the Province has substantially improved as a result of Ministry abatement activities;
- more than 95 per cent of Ontario residents are now served by water and sewage treatment control plants and enjoy an unlimited supply of good safe drinking water;
- solid wastes are now disposed of in an environmentally acceptable manner and we are seeking the means of reducing our dependency on landfill by improved recycling; and,
- rapid strides have been made in the scientific field as our knowledge and detection capabilities have expanded dramatically.

To-day, the Ministry measures some contaminants in parts per trillion – a million times more sensitive than detection levels of ten years ago. As a result, we are able to identify potentially harmful substances in minute amounts.

But along with our successes, the Ministry has identified new areas of environmental concern, which now require a major concentration of our resources. These concerns are associated mainly with chemicals, the consequence of our heavy industrialization and consumer-oriented life style.

Over 100,000 man-made chemicals have entered the manufacturing stream since World War II and 1,000 new chemicals are produced each year.

The control and safe disposal of these chemicals to prevent their discharge into our environment are major challenges of the 1980's.

Ministry staff are making significant progress in this area. A comprehensive plan for waste management has been developed and is being circulated for comment. It encompasses solids, liquids, industrial wastes and spills and will result in changes in legislation. These will be introduced in detail in a "Blueprint for Waste Management" in June of 1983.

Our waste management programs which are already in place include an improved waybill system for the transfer of industrial wastes and a special environmental investigative unit to monitor and enforce existing regulations.

Another major challenge is the chemical contamination in the Niagara River and the great need to continue and improve clean-up programs on this environmental frontier.

In 1981, through our fish testing program, we detected levels of dioxin in the fish caught in the River.

Surveillance programs indicate that this contamination stems from industrial waste dumps on the American side of the River and that it is continuing to enter our waters from these sources.

We have also conducted intensive testing on the drinking water supplies of the Niagara River and Lake Ontario. I am happy to report that dioxin has not been found in any water sample. Our extensive testing for a variety of other contaminants confirms that drinking water from the Niagara River is safe and of good quality.

However, I am concerned about the potential long-term effects of the discharges of wastes to the Niagara River from the U.S. industrial complex and on the impact this pollution may have on Lake Ontario.

That is the reason, I established a special scientific group – the Niagara River Improvement Team – to spearhead the Ministry's efforts to monitor the River, to keep abreast of activities in the U.S. and to participate in all possible pollution control actions undertaken in New York State and by international agencies in which Ontario participates.

We are continuing our efforts to ensure that Ontario industrial and municipal discharges do not add to the pollution load in the Niagara River.

Acid rain, of course, is a third major environmental problem of the 1980's.

This phenomenon is having severe effects on the natural environment, particularly on our lakes, rivers, fisheries and vegetation.

Since 1979, when the Acidic Precipitation in Ontario Study (A.P.I.O.S.) was established to investigate the phenomenon we call acid rain and the long-range transport of air pollutants, a complex research program has been developed to determine sources, deposition, effects and feasible abatement actions. In the 1981-1982 fiscal year, we spent $7 million on this program and we anticipate that our spending will increase by $2 million during the current fiscal year.

Research activity has focused on atmospheric, aquatic and terrestrial factors and we are also conducting studies into socio-economic effects.

I am particularly proud of the statistical model developed by A.P.I.O.S. scientists which is unparalleled by any agency elsewhere. This model is designed to provide accurate assessments of emissions of oxides of sulphur and nitrogen as well as an updated inventory of emissions.

While most of the A.P.I.O.S. resources are devoted to research, we will continue our major support of the Canadian effort to persuade U.S. administrators and environmental officials to take effective measures against the transboundary and long-term factors involved in airborne pollution and the threat of acid rain to the environment of both countries.

Ontario has also taken effective steps to reduce its contribution to the acid rain problem. Stringent control measures have been introduced to deal with Ontario's two major sources of acid precipitation, Inco. Ltd., and Ontario Hydro. In addition, we are exploring possible abatement programs for other Ontario sources.

Our goal is to reduce emissions of sulphur and nitrogen gases to levels which will no longer threaten or damage our environment.

There is no doubt that acid rain, the Niagara River and chemical contamination are major environmental threats and that they are indicative of the new concerns facing the Ministry in the 80's. To meet them, Environment Ontario has shifted its emphasis to meet the need. More resources are being channeled to cope with the new forms of pollution, to assess risks and to deliver regulatory programs as required.

To facilitate this change in focus and to ensure that staff have the support necessary to enable us to deal with the challenges of the 80's, the Ministry has reorganized its resources. Our new structure, announced in the spring of 1982, is being implemented as quickly as possible throughout the fiscal year, 1982-83.

The reorganization of the Ministry demonstrates our determination to fulfill our mandate to protect public health and the environment by meeting the new factors which have emerged as the possible environmental hazards of the 1980's.

Keith C. Norton, Q.C.
Minister of the Environment

Highlights of the 1981-82 Fiscal Year

The 1981-82 fiscal year was one of transition for the Ministry of the Environment. During the 1960's and 1970's Ministry efforts were primarily directed towards control of traditional pollutants, which are now largely regulated and will basically only require the maintenance of existing programs. Ontario's investment in water and sewage treatment facilities have paid large dividends in the protection of our waterways and drinking water. Air pollution control measures have significantly improved the air quality of the Province. Solid waste disposal practices have improved markedly.

However, an increasing awareness of potential health effects and the environmental impacts of many pollutants presents a new set of challenges. For instance, a number of pollutants now of concern could previously not be identified at very low concentrations. The Ministry also has rising concern over diffuse or hard to control sources of pollutants that were not previously regulated.

These new circumstances led the Ministry to reconsider its corporate mandate. As a result, in 1981 the Ministry adopted the following goal statement:

"To achieve and maintain a quality of the environment – including air, water and land – that will protect human health and ecosystems and will contribute to the well-being of the people of Ontario".

To meet these newly recognised needs and to put greater focus on the regulation of discharges to the environment, the Ministry required an improved and future-oriented organization.

In the spring of 1982, after several months of careful deliberation and planning the Ministry announced a major restructuring of its organization. This will take place throughout the 1982-83 fiscal year.

But this was not the only major occurrence of 1981-82. Many significant developments took place in Ministry programs, which are briefly summarized:

Water and Sewage Services

A large part of the Ministry's budget involves the provision of grants and support to municipalities to enable them to provide adequate services for the protection of the local environment and public health. The support includes financial subsidies and long-term loans, grants, project management, technical advice and, in some cases, operation. In recent years, the Ministry has encouraged municipalities to assume responsibility for the operation of their facilities, if they are capable of doing so.

Through the Ministry's direct grant program which assists municipalities in the construction of water and sewage works, more than $80 million was provided to municipalities throughout the Province in 1981-82.

Approximately 46 sewage and water treatment facilities were completed and many others are still in construction or planning stages. In addition, the Ministry operated over 300 Provincial water and sewage plants servicing over 200 municipalities.

The Ontario Waste Management Corporation

The Ontario Waste Management Corporation was established as a Crown Agency to develop and manage the operation and facilities which will meet Ontario's long term liquid and hazardous industrial waste treatment and disposal needs. With over 60 million gallons of hauled liquid industrial waste generated annually, the need for new facilities is urgent.

In the fall of 1981, it was determined that the proposed site for the facility in South Cayuga was unsuitable. The Corporation is now investigating alternative sites for detailed study and consideration of the Hearing Panel.

The Corporation is also conducting an information program to keep the public informed of all aspects of its work.

Waybill System

To control the transportation of hauled liquid industrial wastes throughout the Province, the Ministry developed a fully computerized waybill system, which permits government monitoring and checking of every load moved for disposal.

In addition, the Ministry is revising regulations to ensure even greater public safety and is working on requirements for driver training and carrier bonding. The responsibility of the carriers and the generators of waste materials as well as carrier standards will be detailed. To complete the waybill system, a sixth copy of the form will be required for the receiver of waste to return to the generator. In future, the Ministry plans to require the registration of all generators of the wastes.

Enforcement

In January of 1981, a Special Investigations Unit (SIU) of 13 specially trained investigators was established to crack down on the illegal dumping of industrial wastes and other unusual forms of pollution. The Unit is supported by amendments to Ministry regulations, which have established fines for the illegal handling and dumping of industrial wastes and which empower the Ministry to seize vehicles involved in such activity.

In its first year of operation, the Unit was involved in 213 investigations and assisted environmental officers in 115 others. In addition, they conducted 88 surveillances and investigated the operations of 1,029 transporters of liquid industrial waste.

Identification of Old Waste Sites

Another of Environment Ontario's major waste management programs concerns the identification of old waste sites in Ontario. These former sites, many of them buried and abandoned were closed before the Province took over waste management a decade ago. To date 1,451 closed sites have been identified and rated according to their former use.

After the initial inventory, 197 sites were marked for further study. Following this, Ministry staff required corrective measures on two sites by the municipalities concerned. Additional monitoring was carried out at 91 sites and 14 required additional study which is now underway.

Another study is under way to evaluate the use of remote sensing techniques to identify former waste disposal sites and facilities, as well as to monitor their environmental impacts. A multi-modular data processing system is also under development by the Ministry for storing information on all waste disposal sites.

Following Environment Ontario's leadership in the investigation of closed waste sites, the federal government proposes to launch a joint program to assist other provinces in undertaking such inventories and monitoring.

Source Separation Programs

The Source Separation Program, announced in August, 1981, offers financial and technical assistance to municipalities or private companies to implement new multi-material recycling projects or to expand existing ones. Guides, information sheets and promotional materials have been developed to assist project operations under the general promotional umbrella of "Be A Good Sort". Financial support has been committed to projects in Halton Region, Niagara Region and Richmond Hill. The two projects in Halton and Niagara also provide employment opportunities for the handicapped.

Laboratory Services

Many of Environment Ontario's programs depend on the efficient and effective services of its laboratories in Rexdale, Thunder Bay, Kingston and London.

In October of 1980, a new dioxin laboratory was opened at the main laboratory in Rexdale. This facility provides Ontario residents with an extra measure of environmental protection as it enables the Ministry to test for dioxin in both fish and water samples.

During the 1981-82 fiscal year, a new mass spectrometer, costing $300,000, was installed. With this equipment and with newly improved testing techniques, Environment Ontario's scientists can now detect a range of types of dioxin at levels of two parts per trillion (ppt) in fish and to 0.02 ppt in water. This represents a five-fold reduction in detection limits within a very short time.

Furthermore, a method was developed to monitor viruses in raw sewage and effluent samples. This capability is being extended to bring methodology on-line to analyse for the presence of viruses in drinking water supplies.

The bio-hazards laboratory underwent a $400,000 expansion. The Unit is currently completing method development work to complement the existing Ames test capability. This will strengthen the lab's ability to isolate and detect mutagens (agents of genetic damage) present in the environment.

In addition, the main lab completed extensive method development work to establish a priority pollutants analytical protocol. This new capability allows the Ministry to selectively monitor surface water and drinking water supplies for over 120 parameters, 80 of which relate to trace organic contaminants. With this system, the Ministry now possesses one of the most extensive analytical capabilities available anywhere to assess the quality of Ontario's drinking water supplies.

Acidic Precipitation

Since 1979, when the Acidic Precipitation in Ontario Study (APIOS) was established to investigate acid rain and the long range transport of air pollutants,

a complex research program has been developed to determine sources, deposition, effects, and feasible abatement actions. In the 1981-82 fiscal year, $7 million was spent on this program.

During the year, Ministry scientists developed and validated a statistical model for estimating the total deposition of sulphur throughout the Province. In the 1982-83 fiscal year, this model will be expanded to include oxides of nitrogen (NOx).

The monthly and event deposition monitoring networks were expanded to include 60 locations. These stations will continue to monitor wet and dry depositions, airborne particular matter and gaseous sulphur and nitrogen.

The cumulative monthly network will assist in determining acid loadings in various areas in Ontario; whereas the event or daily network will assist in linking specific emission sources to receptor areas. The monitoring of other airborne pollutants, such as dissolved sulphur dioxide (SO_2), mercury and organics, will soon begin at a limited number of sites.

Aquatic, terrestrial and socio-economic studies continued throughout the year (see Acidic Precipitation in Ontario Study Office).

The Aquatic Effects Study focused its activities primarily around the Ministry's research facility at Dorset, which was expanded during the year.

Ontario has also taken major steps to reduce its own contribution to the acid rain problem.

The Ministry has ordered Inco Ltd. and Ontario Hydro to cut back their sulphur emissions. Inco is acknowledged as the largest single point source of sulphur emissions in North America. Ontario Hydro with its coal-fired plants is Ontario's second largest source. The Ministry's goal is to reach the level of emissions our environment can tolerate without suffering.

Because of the international scope of the problem, Ontario has been working very closely with the federal government and other provincial governments to examine the problem and to propose various abatement strategies. In February 1982 during recent negotiations in Washington, D.C., Canada put forward a proposal which calls for a 50 per cent reduction from current levels of acid gas emissions by both the United States and Canada. Ontario is on record as endorsing this position. The Ministry is prepared, if the United States agrees to this percentage reduction, to sit down with the federal government and the provinces concerned to negotiate Ontario's portion of the reductions required to meet Canada's overall commitment to the 50 per cent decrease.

Without a commitment from the United States similar to the one Canada is prepared to make, Ontario cannot win the fight against acid rain. The Ministry anticipates a resumption of negotiations later this year. In the interim, the working groups established under the Memorandum of Intent, in which Ontario is an active participant, will continue to provide information to assist in the preparation of a bilateral agreement to address the problems of the long-range transport of air pollutants.

The Ministry has also been involved in a series of legal interventions with the U.S. Environmental Protection Agency. For more information on this and on the Ministry's "visits" program conducted for U.S. legislators and journalists, see the main body of this report.

Niagara River

The Niagara River is the single largest tributary source to Lake Ontario. Although treated drinking water from the River is safe and of high quality, the Ministry has detected the presence of contaminants in some species and sizes of fish in the River. These contaminants do not break down in the River and have the ability to accumulate in plant and fish life.

Ministry scientists have conclusive evidence that the contamination originates from the chemical complexes and the disposal sites on the U.S. side of the River.

Obviously, the chemical sources in the United States must be cleaned-up and must come under tighter control. Ontario is pressing New York State and the U.S. agencies for immediate action on this problem. For its own part, the Ministry has established a special Niagara River Improvement Team to lead the Ministry's efforts to monitor the River, to follow activities in the United States closely, and to participate in all possible pollution control actions in New York State.

The Improvement Team, working in conjunction with the staff of the Ministry's West Central Regional Office will also continue to work with the interagency Niagara River Toxics Committee. The Committee has developed a comprehensive monitoring program designed to identify sources of toxic pollutants, assist with the development of control programs, and determine the effectiveness of abatement strategies.

The Ministry is making particular efforts to ensure that Ontario industrial and municipal discharges are not adding to the pollution load in the Niagara River. These discharges are monitored regularly to ensure they comply with Provincial standards.

Because of increasing public concern for the safety of the water supply at Niagara-on-the-Lake, the Regional Municipality has moved ahead on phasing out the outdated water treatment plant by constructing a pipeline connecting Niagara-on-the-Lake with the St. Catherines De Cew Falls water supply.

The Province is considering participating, in 1982-83, in approximately 15 hearings in the U.S. concerning the renewal of State Pollution Discharge Elimination System (SPDES) permits. In addition, the Ministry will closely follow the progress of the three pending litigations brought by the State against waste disposal sites in the Niagara area.

Canadian Centre for Toxicology

A major weakness of environmental agencies around the world is the lack of information on the significance of the trace levels of contaminants now being detected.

To address this important imbalance the Province announced its intention in 1981 to support the establishment of a Centre for Toxicology, building on programs which are currently at the Universities of Toronto and Guelph. The Ministry of the Environment has been designated the lead Ministry for Provincial involvement with the Centre.

The programs and policies of the Centre are being developed and feasibility studies are underway. The proposed programs of the Centre will include analytic and testing services, cellular and molecular toxicology, epidemiology, environmental and food chain dynamics and professional training.

The Centre is intended to be a consortium involving all levels of Government, industry and the university community and is seeking financial support from several sources. As a consortium, it will build upon the strengths of these supporters, and apply its resources to the diversity of needs that its supporters present.

The universities concerned are already providing staff and facilities and industry has indicated it is willing to participate.

These highlights and other Ministry activities and achievements are reported in more detail in the following sections, which are set out according to Division and Region.

deputy minister

Deputy Minister – Gérard J. M. Raymond
Executive Assistant – R. G. Clark

Program Planning and Evaluation Branch

Director: A. Castel

The role of the Program Planning and Evaluation Branch is to identify the broad program and resource needs of the Ministry and to co-ordinate the effective management and efficient utilization of Ministry resources. There are three main areas of responsibility.

First, the Branch analyzes Ministry policies and programs, co-ordinates policy development and provides liaison with the government's central agencies including the co-ordination of policy submissions. In 1981-82, the responsibility for analyzing policies and co-ordinating policy development gained recognition and support. The Branch distributed seven new policies including, for example, a policy on Environment Ontario's Pollution Abatement Program for the Pulp and Paper Industry. Also, the Branch submitted several notable submissions to the Cabinet Committee on Resources Development regarding the Grand River Basin Water Management Study, and regarding Amendments to the Environmental Protection Act.

Second, the Branch develops and maintains Ministry strategic and operational planning systems. In 1981-82, approval was obtained for the strategic planning process and implementation is planned for 1982-83. Also in 1981-82, the Branch enhanced the Ministry's MBR (Management-By-Results) system so that better information is available to support more consistent application to management needs. The special studies completed in 1981-82 focussed upon the Ministry's role in the operations and management of water and sewage works.

Third, the Branch provides socio-economic analysis of environmental concerns and of the impact of economic activities on the environment.

The Branch provided the Co-ordinator for the Canada/Ontario Task Force on Inco and Falconbridge whose task it was to guide Task Force studies of emission control options for the smelters and of the socio-economic impact of controls.

In addition, the Branch concluded several studies of the economic impact of environmental activities, for example, a study of the economic impact of rehabilitation of the English Wabigoon River System, and a study of the economic incentives for industrial waste management.

The Branch also produced several studies in support of the U.S.-Canada Memorandum of Intent

on Transboundary Air Pollution; specifically sections dealing with Economic Benefits, Methods and Inventory of Resources at Risk, and Emissions and Control Options.

The Branch also supported the Ministry's interventions into various U.S. regulatory proceedings by providing economic analysis in conjunction with the submission to the U.S. Environmental Protection Agency on Interstate Pollution Abatement and the submission to the Michigan Air Pollution Control Commission on Detroit Edison's Monroe power plant. Also, increased emphasis has been placed on providing studies of the economics of internal administrative processes and providing advice to Senior Management on the financial and economic implications of abatement and enforcement activities.

Legal Services Branch

Director: J.N. Mulvaney, Q.C.

During the 1981-82 fiscal year, staff of the Legal Services Branch undertook 59 prosecutions. As of April 1, 1982, 32 of these resulted in convictions, one was withdrawn and 25 were still before the courts. The largest fine obtained for a prosecution initiated in the fiscal year was $8,500 against Kimberley-Clark of Canada Ltd.

The Branch was involved in Ontario's submissions to the U.S. Environmental Protection Agency with respect to acid precipitation and to the State of New York regarding poorly-treated sewage flowing into the Niagara River from the City of Niagara Falls.

Staff also drafted the Consolidated Hearings Act, 1981, which is designed to reduce the multiplicity of hearings required under certain statutes and were involved in two hearings under this Act.

environmental assessment and planning division

Assistant Deputy Minister – J. W. Giles
Executive Director – W. B. Drowley

This Division has three major responsibilities which provide a scientific base for many of the Ministry's policies and activities:

To serve as the central approval and co-ordinating agency for applications involving the design, construction and operation of water, sewage, solid waste reclamation and recycling plants and waste disposal sites required under Ontario legislation.

To conduct scientific and technical research, assessment and pollution control programs involving the use of water, land and air resources, the environmental implications of realty development and the control of all forms of pollutants.

And, to provide technical and supervisory services required in the planning, construction and operation of water and sewage treatment plants, solid waste and resource recovery facilities.

Air Resources Branch

Director: G. Van Volkenburgh

Air Quality and Meteorology

The Section maintains the data base and telemetering system of Ontario's air quality monitoring network, which in 1981-82 constituted approximately 1250 instruments located in 125 areas.

This network produced approximately 3 million measurements, which are computer processed. The measurements consist of the levels of 12 contaminants or classes thereof, as well as meteorological parameters.

The Section also develops and applies mathematical models to compute the quality of air and dry and wet deposition (acidic precipitation) of contaminants.

The Ontario Air Pollution Index, the basis for the Ontario Alert System, continued to be monitored and publicized daily for Windsor, Sarnia, Hamilton, Niagara Falls, Toronto, Sudbury, Coniston, New Sudbury and St. Catharines. (See page 58.)

Atmospheric Research and Special Programs

The Monitoring and Instrumentation Development Unit monitors air quality in special locations using mobile facilities. It also develops and evaluates new instrumentation to measure concentrations of non-routine air pollutants.

In 1982, Staff were deeply involved in monitoring the CP derailment in Medonte Township. By using the Mobile Air Monitoring Unit (MAMU) and the Trace Atmospheric Gas Analyzer (TAGA 3000) vehicle, they were able to provide advice on potential air quality deterioration.

The Special Studies Unit is responsible for the co-ordination of activities under the Nanticoke Environmental Management Program (NEMP) and for carrying out the atmospheric chemistry and deposition (wet and dry) program for the Acidic Precipitation in Ontario Study.

The Atmospheric Contaminants and Research Planning Unit was involved in developing convenient methods of field sampling for organic vapours and in emergency response planning. They are also conducting a comparison study of methods for sampling inhalable particulate matter.

In addition, the Section was responsible for 17 research projects sponsored through the research grants program for a cost of $274,000. The money was received by researchers in Ontario Universities.

Extensive Air Monitoring Surveys in 1981-82*

Compounds	Location	Source
Toxic Chemicals	Hamilton	Upper Ottawa Street Landfill Site
Hydrocarbons and Amines	Sarnia	Tricil Ltd.
Amines	Sarnia	Chinook Chemical
Range of Organic Compounds	Elmira	Uniroyal Ltd.
Hydrocarbons, Sulphur Dioxide, Reduced Sulphur Compounds	Breslau	Breslube Enterprises
Hydrocarbons	Hamilton	Diamond Shamrock Ltd.
Hydrocarbons	Toronto	T.T.C. Yards
Reduced Sulphur Compounds	Nanticoke	Texaco-Stelco
Particulates, Hydrocarbons, Nitrogen Oxides, Ozone, Sulphur Dioxide	Windsor	Transboundary Air Pollutants

**Further information on these surveys is available to the public upon request.*

Emission Technology and Regulation Development

During the fiscal year, the Regulation Development and Environmental Assessment Unit established four guidelines for new contaminants and issued comments on air quality in 25 environmental assessments. Staff made recommendations in the revision of O. Reg. 308, assisted in the development of Ontario Hydro Regulation (O. Reg. 7/82) limiting the emission of sulphur dioxide and nitrogen oxides, and was the lead group in the establishment of a new regulation (O. Reg. 151/81) for the control of sulphur dioxide in Sarnia.

The Control and Process Technology Unit undertook intensive review of the electrical power and major non-ferrous smelting and refining operations in Ontario, particularly with reference to reducing acid precipitation. In addition, staff evaluated special studies and other information on emission control technology to assist the Long Range Transport of Air Pollutants Abatement and Strategy Committee. Staff also participated in an inter-Ministry health study on fluorides and in the evaluation of PCB destruction systems.

In 1981-82, the Source Measurement Unit, in co-operation with the Ministry's pesticide laboratory, developed specialized methods for testing dioxins and other hazardous chlorinated compounds from thermal incineration. Staff also worked with industries to introduce new equipment for the continuous monitoring of air pollution sources; wrote reports on emissions in Sudbury and Nanticoke; and, helped design and execute source testing in a number of specific industries.

Phytotoxicology

The Section conducted soil and vegetation assessment studies near 71 industrial and other sources in Ontario and investigated 221 vegetation complaints from the public.

During the 1981 crop-growing season, Staff conducted extensive field assessment surveys to determine the degree of photochemical oxidant (ozone and/or peroxyacetyl nitrate), injury on white bean, tomato and potato crops. Oxidant injury to crops was more severe in 1981 than in 1980.

Several field investigations continued in the vicinity of industries emitting atmospheric fluorides, particularly near the St. Regis Indian Reserve, Cornwall Island. The purpose of the studies is to define the current area of contamination resulting from fluoride emissions from Reynolds Metals Company and the Aluminum Company of America, Massena, New York.

In 1981, the Ministry officially opened its new greenhouse facility, in Brampton. This is the largest controlled growth environmental facility in Canada. It will enable scientists to carry out long term studies on possible synergistic damage to vegetation due to the simultaneous effects of various pollutants.

Vehicle Emissions

During 1981-82, 4,519 cars in 20 locations throughout Ontario were spot-checked for emission controls and exhaust pollutant levels. Of these, 2,154 (48 per cent) exceeded Ontario emission standards and their operators were requested to have the problem corrected. Approximately 357 cars (eight per cent) had pollution control equipment disconnected or inoperative and were issued violation notices.

In total 2,673 cars were inspected at 280 used-car dealerships and 80 violation notices were issued. During spot-checking of muffler shops and gas stations, 221 muffler shops were visited to ensure proper replacements for catalytic mufflers and 201 gas stations were checked to ensure that leaded gasoline is not dispensed to catalyst-equipped vehicles. Highway patrols, in co-operation with OPP personnel, resulted in 473 diesel trucks being stopped for excessive smoke emissions. Subsequently 55 warnings and 418 charges were issued; 358 operators were found guilty and fined, with the remaining cases still pending.

Staff made 31 visits to community colleges to explain the provisions of the Environmental Protection Act and the Ministry control program to 2,673 student mechanics.

Water Resources Branch

Director: D.N. Jeffs

The Ministry of the Environment carried out a minor re-organization in 1981 and transferred three units to the Water Resources Branch. With the addition of the Industrial Organics and Inorganics Units, the Branch strengthened its ability to monitor hazardous contaminants and to make recommendations on the control of industrial sources of water pollution.

The transfer of the Ground Water Development Unit added to the Branch's hydrogeologic research capabilities and its protection of groundwater quality.

Water Management

The implementation of water management policies continued under the direction of the Water Management Steering Committee and its five working groups. Compatibility among policies and guidelines of various ministries was advanced through the formation of an Interministerial Water Management Committee. Examples of interagency liaison activities include MOE-MNR roles on fisheries and water resources management, strategic planning for Ontario fisheries, aquatic plant harvesting guidelines, recreational water quality, underground storage of petroleum products, urban drainage policy, erosion and sedimentation. Numerous reports on technical procedures were published. Branch staff also participated in federal-provincial and international committees working on a wide range of water management programs.

The Branch provided technical input to the Maple Landfill Committee through liaison with the proponent's consultant on an adequate response to the Environmental Appeal Board's conditions for the site. The Branch also worked with the Ministry of Transportation and Communications/Ministry of the Environment Salt Contamination Committee.

By year-end, Staff had issued 451 drilling and boring contractors licences and licenced 11 new contractors. Prosecutions against two drillers on four charges were successful; renewal of one licence was refused and two other prosecutions were awaiting trial. Approximately 8,930 water-well records were received for processing.

The Branch co-sponsored a one-day water-well drilling conference on well completion techniques to emphasize proper well completion, the use of pitless adaptors to connect plumbing systems to wells, and the Ontario Hydro requirements on connecting submersible electrical pumps to electrical systems.

Amendments to Sections 21 and 22 of the Ontario Water Resources Act, dealing with construction of water wells, received Third Reading and Royal Assent late in 1981; revised regulations prepared under the amendments will be introduced in 1982.

Observation wells were established to monitor municipal water-supply aquifers at Barrie and Newmarket-Aurora. Observation wells near the City of Guelph were re-instrumented for improved data acquisition on the local aquifers used for water supply.

Staff have also undertaken a study to determine the potential of wetlands for year round sewage treatment. Phase I of the marshlands project at Listowel was completed in 1981. This experimental facility is now operational and preliminary information on treatment technologies is available. The results are being applied to other areas.

Sport Fish

Again during 1981-82, Ministry Staff co-ordinated the co-operative Ministry of Natural Resources/Ministry of the Environment program of collecting sport fish from throughout Ontario and testing them for a variety of trace contaminants such as mercury, PCB, mirex, and DDT. For the first time, results were provided on tests for dioxin.

During the year, the Ministry issued six environmental health bulletins containing new or updated information on contaminants in fish.

Grand River Study

Activities related to the Grand River Basin Water Management Study centred around the completion of the final report, its appendices and supporting technical reports.

Stratford-Avon River Environmental Management Project

In this two-year study, information was assembled on water quality, aquatic plants and algae, hydrology and pollutant loadings from sewage treatment plants, industrial discharges and agricultural areas. Demonstration projects of remedial measures were initiated in-stream and in the urban and rural areas.

Lake Simcoe Environmental Management Strategy Study

This study is being conducted by the Ministry and the South Lake Simcoe Conservation Authority. The goal of the project is to restore the water quality of Lake Simcoe to a level that will support a cold water fishery, with the specific objective of reducing algal growth in the lake by controlling phosphorus loadings.

In the first year of this three-year study, technical studies were initiated on monitoring the flow and quality of streams entering Lake Simcoe; the collection of agricultural land use data; and, monitoring the quality of Lake Simcoe.

Toronto Area Watershed Management Strategy Study

Activities relating to the Toronto Area Watershed Management Strategy Study began in 1981. The Ministry is conducting the project in co-operation with the Metropolitan Toronto and Region Conservation Authority, the City of Toronto and the Boroughs of Metropolitan Toronto. During the first year of the project, staff compiled existing sources of data on water quality and pollution control systems and collected additional data needed to fill major gaps in the data base.

Industrial Wastewater

As part of the program to control industrial pollution, information on abatement strategies and wastewater data for Ontario industries were provided to the International Joint Commission (IJC). The Ministry was represented on the IJC Point Source Pulp and Paper Task Force and several industrial status reports and guidelines were prepared.

The Toxicity Unit conducted surveys in Cornwall to assess the potential impact of discharges from Courtauldes Industry on the St. Lawrence River; in Hawkesbury at the Canadian International Paper's (CIP) mill; and, in Elliot Lake to assess the impact of tailings on the Serpent River.

Contaminant surveys were carried out in the Humber and Don Rivers, in the Niagara River, and at other locations on the Great Lakes using young-of-the-year minnows. Staff worked jointly with Environment Canada on a pulp and paper survey in the Northwestern Region.

Water Resources Inventories

Results from a water resources inventory study of the basins of the Holland and Black Rivers were assembled for publication, field work was completed in the Humber and Don Rivers, and planning was commenced for the Credit River study.

Water resources data (1980) for streamflow, water quality and observation well monitoring networks were released in three publications: Water Resources Bulletin 3-15, Surface Water Series; Volume XVI, Water Quality Data Series; and, Water Resources Bulletin 2-107, Ground Water Series.

Water well information obtained from licensed drilling and boring contractors was released in two publications in the Ground Water Series: Water Resources Bulletin 2-27, County of Simcoe, 1946-1977, and, Water Resources Bulletin 2-28, Regional Municipality of Niagara, 1946-1979.

In addition, the ground-water mapping program continued and a ground-water probability map for the County of Simcoe (Southern Portion) was released.

Engineering, Scientific and Data Services

Geophysical surveys involving seismic, resistivity, gravity, well logging and magnetometer techniques were undertaken to assist in the investigation of ground-water contamination problems, ground-water development projects, hydrogeological investigations for waste disposal sites, geological mapping for construction materials, well construction and the location of buried metal containers containing hazardous materials.

Ground-water surveys and general reviews of ground-water potential were undertaken for eight municipalities, and seven test drilling and well construction projects to develop municipal water supplies were supervised.

Water resources data were supplied on request to consultants, educational institutions, other government agencies and the public interested in the Province's water resources.

Technical input and guidance was provided to the Niagara Escarpment Commission at three sector hearings on the significance of ground water in various land development proposals along the Niagara Escarpment.

Technical assistance was also provided to the Environmental Hearing Board regarding the extension of the York Sanitation landfill at Whitchurch-Stouffville.

Inland Lakes

Staff completed the writing and review of a major report on the limnological portion of the Sudbury Environmental Study. The Study involved intensive monitoring of seven lakes in the Sudbury area. The acidic control lake, Clearwater Lake, was monitored for seven years. This represents the world's longest continuous monitoring program of an acidic lake.

Acidic Precipitation in Ontario Study

Staff were deeply involved in the Acidic Precipitation in Ontario Study (APIOS). They continued intensive sampling and analysis of the eight major study lakes near Dorset and their 31 associated watersheds.

The Branch completed Phases I and II of the impact assessment investigations, under the Canada-U.S. Memorandum of Intent on long range transportation of air pollution, regarding the impact of acid rain on the aquatic environment. The results were published jointly by Canada and the U.S. They indicated that sulphur dioxide and sulphate are prime contributors to the acidification of watersheds and sensitive lakes and that increased loadings during the snow melt period damage aquatic life. Phase II of the report identified target loadings of sulphate required to protect all but the most sensitive lakes. Information from the Ministry's watershed studies and its extensive lake monitoring program provided valuable facts for the aquatic impact reports.

Staff also participated in interventions, public information symposiums, congressional tours and hearings related to acid rain.

At the request of the Swedish and U.S. governments, Staff took part in the evaluation of research and investigative programs in both of these countries.

Booth Aquatic Research Group Inc. was awarded a contract to begin a new experimental lake neutralization study in Sudbury and the Muskoka/Haliburton areas. The study is designed to determine the possibility of restoring sport fishery to acidified lakes and of protecting valuable fish stocks in sensitive lakes, endangered by acidic precipitation.

Investigations of the effects on fish of metals released to streams and lakes by acid precipitation, snowmelt and storm runoff were initiated in the laboratory and at the Dorset field site.

Great Lakes Program

The Great Lakes program is a federal/provincial cost-shared surveillance, investigation and assessment program providing the data and information required for defining existing environmental conditions and trends in the nearshore areas and connecting channels of the Great Lakes, and determining cost-effective pollution abatement and prevention measures necessary to restore and maintain water quality in accordance with Provincial objectives and the objectives of the Canada-U.S. Agreement of 1978.

Ministry surveillance programs along with the programs of other environmental and regulatory agencies around the Great Lakes are rapidly adding to our knowledge of the distribution of many compounds such as mercury, PCBs and DDT as well as of many new contaminants. Controls on the manufacture, transport, use or emission of the contaminants of most immediate concern have been implemented across the basin.

The following are the highlights of the Ministry's surveillance activities on a lake-by-lake basis. More detailed findings are reported in the 1981 Great Lakes Water Quality Board Report to the International Joint Commission and the Ministry's Great Lakes Water Resources reports.

Lake Superior

In preparation for the 1983-84 Lake Superior intensive surveillance year, a detailed investigation was conducted in Jackfish Bay to assess the effects of a pulp and paper mill discharge on water quality and biota. Findings of this assessment were provided to the Pulp and Paper Point Sources Task Force for use in its 1981 Report to the Great Lakes Water Quality Board. The Report concluded that the pulp and paper industry has made substantial progress in meeting effluent limitations and must continue its pollution abatement programs in a timely fashion to meet the requirements of the Canada-United States Agreement.

Lake Huron

As part of the 1980-81 Lake Huron intensive surveillance year studies, reports on the water quality conditions at Owen Sound, Wiarton and Collingwood

were completed. Enrichment of Collingwood Harbour, causing nuisance algal growth, is being addressed through the upgrading of the municipal sewage treatment facility.

Monitoring of the impact of construction activities and flow alterations at Great Lakes Power on the St. Marys River showed no adverse effects on local water use. Elevated phenolic and bacterial levels however continue to exist along the Sault Ste. Marie waterfront and have locally restricted recreational use.

Surveillance of the effects of reduced phosphorus loadings continued in the Penetang-Midland area. Limited exchange of the waters of Georgian Bay and the waters in embayment areas receiving treated municipal effluents are slowing the response to phosphorus control.

Lake Erie

Lakes Erie and St. Clair, combined with the St. Clair and Detroit Rivers, drain one of the most developed urban areas on the Great Lakes. Because of the high potential of man's impact on water quality in this area, annual surveillance programs are maintained to closely monitor and detect resulting environmental problems.

Based on the 1978-1979 intensive surveillance year studies, the Ministry and Ohio State University prepared a joint report on the western basin of Lake Erie. Nutrient levels showed a gradual decline from the western basin towards the central basin; levels along the Ontario shoreline remained low and relatively uniform.

Monitoring continued in the St. Clair River for phenolic compounds and public health indicators; at Nanticoke for effects of industrial development; and, along the Ontario shoreline of the Detroit River for the response to municipal abatement measures. Improvements in controls on the discharge of trace organic chemicals are being pursued to ensure continued protection for water supplies and fish. The environmental quality of the Detroit River and the western basin of Lake Erie has improved considerably over the last decade, as a result of better treatment of municipal and industrial point source discharges.

Lake Ontario

As part of the Great Lakes International Surveillance Plan (GLISP) intensive year studies, regular nearshore Lake Ontario monitoring was enhanced to include an intensive water quality spring cruise; weekly phytoplankon/nutrient monitoring at three locations corresponding with three separate water quality regions; a comprehensive benthic invertebrate survey; an investigation into oxygen depletion status in the eastern basin off Prince Edward County; and, a bacteriological survey of the Bay of Quinte.

In addition, investigations continued with special emphasis on the Niagara River and the Toronto waterfront. In the Niagara River, efforts were focused on the continued identification of sources, monitoring of water and sediment quality and the biomagnification of persistent toxic substances. Results were reported and discussed in the Canada-Ontario Review Board's publication, entitled "Environmental Baseline Report of the Niagara River, November 1981 Update". Results of surveillance effects indicate that the Niagara River is a continuous source of numerous trace metals and organic compounds to Lake Ontario. High priority efforts were continued to identify sources of pollutants, recommend necessary control programs for both Canadian and U.S. sources, and develop long-range water quality monitoring programs.

Intensive investigations of the Toronto waterfront conducted in 1980 led to the publication of two Ministry reports on the effects of dredging, of dredged soil disposal and of lakefilling activities on the water quality in the area. 1981 surveillance concentrated on measuring response to waterfront remedial activity and ongoing development. Water supplies and public beaches were generally unaffected by the waterfront activities.

Basin Wide Studies and Support Activities

Ongoing basin wide programs to support the Great Lakes surveillance were radioactivity monitoring, tributary monitoring, surveillance of contaminants in young-of-the-year fish, Great Lakes municipal intakes monitoring, monitoring of the outlets at Lake Superior, Lake Huron and Lake Erie and interlake mass balance studies.

In 1981, 139,378 sample analyses were carried out at the Toronto and regional laboratories in support of the Great Lakes surveillance program and reportings were made to IJC, COA Review Board, government departments and the public.

Pollution Control Branch

Director: K. E. Symons

Municipal and Private

During the 1981-82 fiscal year, data on the fluoridation of drinking water in Ontario was compiled and mailed to the municipalities which add fluoride, the Medical Officers of Health and field staff. This data is used by the Directors of Dental Services of the Health Units and others engaged in dental health programs.

In July of 1981, the consultative and advisory functions related to private water supplies were transferred from the Ministry of Health to Environment Ontario. Since the Ministry assumed this responsibility, staff have assisted two local public health agencies in organizing surveys of contaminated bathing beaches in their areas. Advice was also provided to local public health agencies on private water supply problems and corrective measures were recommended on water quality problems arising from 81 private wells.

Guidelines on house water treatment devices were finalized and published and were distributed to the Ministry's Regional Offices and local public health agencies. Staff conducted seminars on private water in two health unit areas and completed, for the Ministry of Health, guidelines for the inspection of environmental conditions in schools.

Negotiations were completed with the federal authorities to provide grants of $65 million over a three year period, starting in April 1982, to assist in the construction of municipal sewerage systems in the Great Lakes Basin under the terms of the Canada-Ontario Agreement on Great Lakes Water Quality. During 1981-82, federal funding of municipal water and sewage projects came to an end.

An intensive effort was initiated to systematically review and update all policies and guidelines in the municipal sewerage area. Twelve reviews were completed and 14 others initiated.

Monitoring and evaluation of the phosphorus removal program continued. In 1981, 245 wastewater treatment plants with phosphorus removal facilities removed an estimated 7,500 tonnes of phosphorus which would otherwise have been discharged to Ontario's lakes and rivers.

Implementation of the Guidelines for Utilization of Sewage Sludge on Agricultural Lands successfully moved into the third year of its phase-in period. Municipalities are now spreading sludges under Ministry guidance. Corrective measures, brought into effect by municipalities, will ensure maximum agricultural utilization of sludges with minimum risk to health, the environment and crop production.

Development of Phase I of the Total Utility Monitoring and Management Information System (TUMMIS) was completed. The System stores performance data for water and wastewater treatment facilities across the Province, and is now capable of automatically assessing compliance with specified performance criteria. Input of data has begun. TUMMIS assists in monitoring the progress of remedial action for plants out of compliance and forecasting needs of operational or plant changes.

Four notices were prepared and distributed to those responsible for administering and delivering the Private Sewage Program to keep them informed on technical, financial and legal aspects governing private sewage systems.

The products of 41 septic tank manufacturers were accepted for use in the Province, following a review of reports submitted by consulting engineers on their behalf.

As a result of substantial revisions to the regulations on Private Sewage Systems made under Part VII of the Environmental Protection Act, O. Reg. 374/81 was filed and issued to all those delivering the private sewage program. Staff conducted 13 seminars throughout the Province to introduce and discuss the Regulation. Some 600 persons from the Ministry, Health Units and consultants attended.

Noise Pollution Control

Staff provided expert testimony or consulting services in three legal actions and at four Ontario Municipal Board Hearings. One hundred and fifty noise complaint procedures were processed and 28 noise vibration complaint investigations were carried out. In addition, 28 environmental assessments and 85 applications for Certificates of Approval were reviewed for comment and 502 new land uses were reviewed for potential impacts.

Seventy-nine municipalities have now adopted a noise control bylaw under Section 138 of the Environmental Protection Act. Seventy-one of these bylaws and six others in process prohibit prescribed noise-making activities by time of day and place in the community. Three comprehensive bylaws and four animal noise specific bylaws were also approved and adopted.

Staff participated in the development or review of 20 Ministry and inter-agency policy statements on noise. The technical publications directly supporting the Model Municipal Noise Control Bylaw and the implementation of noise control bylaws have been revised in preparation for publication as Volume 2 of the Model Bylaw.

Eight seminars and workshops for 150 participants were given to municipal, regional municipal, and provincial government staffs. In addition, 44 participants received intensive technical training in co-operation with the Canadian Acoustical Association and the Ministry of Labour.

Consultants were retained to study and report on the effects of train noise reflections from barrier walls in the Town of Vaughan.

Pesticides Control

During 1981-82, the Section held 2,051 examinations and issued licences to 6,891 exterminators, 1,033 operators, and 3,717 vendors. In addition, Staff issued 193 permits for the use of restricted products on land, 412 permits for the application of pesticides to water, and 191 permits for structural extermination.

The Ministry approved grants for chemical treatments and structural alterations to control termites for 478 householders in 18 municipalities. The total amount of these grants was $365,000.

Contingency Planning

The Ministry is responsible for the development and maintenance of the "Province of Ontario Contingency Plan for Spills of Oil and Other Hazardous Materials" by organizing the activities of the various government agencies, which may be involved in a major spill. The Plan and its supplement, "Commercially Available Oil Spill Containment and Clean-up Equipment" were updated and reprinted during the fiscal year.

Environment Ontario encourages and helps municipalities and industries to prepare their own contingency plans. Staff were involved in the testing of six contingency plans through field exercises.

During 1981-82, the Contingency Planning Section received spill reports on 568 incidents. An indepth summary of these spills was prepared. In addition, staff supplied spill data retroactive to 1974 to Environment Canada for use in their national review of all spills in the environment. This data will now be supplied yearly.

Research and Development

During the 1981/82 fiscal year, the Ministry funded 195 environmental research projects. Fifty per cent of these projects were carried out internally, 18 per cent by industry, 30 per cent by educational institutions, and two per cent by external research organizations. Staff administered 17 health-related environmental projects funded by Provincial Lottery Funds. The expenditures in 1981/82 were $1.8 million.

Technology transfer was continued through publication of research papers and seminars.

Applied Sciences

This Section is an engineering group which carries out and reports on studies of innovative concepts relating primarily to municipal servicing for Northern communities and alternative private waste systems for non-sewered development.

During 1981-82, staff prepared two reports on the basis of private waste disposal studies and provided technical information for O. Reg. 374/81, concerning private sewage systems.

In addition, staff provided technical advice and field service related to the design, approval and construction of five large subsurface sewage disposal systems for commercial establishments and resorts.

Technical advice was also given to both the public and private sectors on the design and construction of pipelines, including the inspection of five major failures.

Wastewater Treatment

During the 1981-82 fiscal year, the Section was involved in 16 research projects concerning the treatment of municipal wastewaters. Projects included high level phosphorus removal, the application of ultra-violet disinfection technology, and the characterization and fate of organic contaminants in biological wastewater treatment.

Staff participated in four watershed management studies, providing input concerning municipal effluent discharges.

Assistance was provided to 25 municipalities on various aspects of wastewater treatment and to 12 industries concerning their specific waste treatment problems. In addition, Staff reviewed 17 applications for sewage treatment works in conjunction with other Sections of the Ministry.

Various research projects were carried out at the Ontario Experimental Facility in Brampton, including the performance testing of three new aeration devices in conjunction with their manufacturers.

Water Technology

Environment Ontario continued its research into trace organics, contaminants in water treatment chemicals, iron and manganese treatment, asbestos, the effect of treatment processes on treated water quality, distribution systems, and into macro/microbiological water quality.

A technical advisory service is provided to municipalities and engineering consultants on new water supply treatability studies, new water plant commissioning, plant up-rating and plant operational and technical problems, including the advanced treatment necessary for trace contaminant control or removal.

Environmental Approvals Branch

Director: T.W. Cross*

Industrial Approvals

The Section receives and processes industrial applications for the approval and control of facilities for contaminant discharges into the natural environment. The following chart summarizes this activity for the 1981-82 fiscal year.

Applications Processed From April 1, 1981 - March 31, 1982

	Received	Approved	Cancelled	Denied
Air	1,051	1,032	92	1
Water	143	113	27	1
Waste	0	0	0	0
Total*	1,194	1,145	119	2

**Includes "applications received" and "processed" by Technical Support Group, Central Region.*

Staff held a number of meetings with Tricil Ltd. on a proposal by the company to replace the incinerator portion of their Corunna plant and to increase its capacity by 20 per cent. This plant is the only commercial liquid industrial waste incinerator in Ontario. The proposal was approved with the condition that cyanides, chlorinated hydrocarbons, PCBs and radioactive wastes be excluded from the site.

Since the 1979 acquisition of Reed Paper Company in Dryden, Ontario by the Great Lakes Paper Company, a total of $40 million has been budgeted for pollution control. Approximately 50 per cent of this has now been allocated. During the 1981-82 fiscal year, two Certificates of Approval were issued for the control of both air and wastewater emissions including an extended aeration lagoon and a black liquid recovery boiler. A tall oil recovery unit was also constructed to eliminate emissions of turpentine in the atmosphere.

Municipal and Private Approvals

In 1981-82, the Water and Wastewater Approvals Unit processed 834 water works applications at an approximate cost of $128 million and 1,248 sewage works applications at an approximate cost of $380 million.

The processing of these applications was greatly assisted by the Ministry's transfer program for technical review. Under this program, municipal engineering staff review routine water and wastewater applications against Environment Ontario's Guidelines and make recommendations to the Director of the Branch. Fourteen municipalities are now involved in the program.

The Waste Management Approvals Unit processed approximately 115 applications for waste management sites and 720 applications for waste management systems. Of these, 500 were re-issues.

Staff were also involved in an inventory program to ensure that active waste management sites are not serving a population higher than that which the Ministry originally licensed them to serve.

Environmental Assessment

The Environmental Assessment Act is considered by many jurisdictions around the world to be an outstanding piece of legislation.

In 1981, representatives from the Scottish Development Department, the Mexican Federal Government and the Netherlands visited the Ministry to learn more about the Act. In addition, at the request of the World Health Organization, staff advised the Polish Government on the establishment of an EA type process for major industrial, utility and resource projects.

Since the Act has come into force, Environment Ontario has received 80 Environmental Assessments (EAs) for both individual projects and classes of projects. Forty-two of these were approved or approved with conditions, four projects were referred to the Environmental Assessment Board for hearings under the Act and two projects for hearing under the Consolidated Hearings Act.

Staff worked with municipal representatives to develop Class EAs for road projects, water and sewage projects, urban transit problems and non-profit housing. The interim exemption covering these projects expires December 31, 1982.

A two-day seminar was also held for municipalities to provide additional training in environmental assessment.

A proposed terms of reference for an EA Advisory Committee to advise the Premier on exemption requests before Cabinet decisions and on EA matters in general was prepared.

During the year, staff completed the Government's Final Response to the Recommendations of the Environmental Assessment Board's Report on the Elliot Lake Inquiry.

EA Update, an information digest for professionals interested in EA matters, was published four times during the year.

**T.W. Cross retired in June, 1982 after 16 years of service with the Ontario Government.*

Land Use Co-ordination

During the 1981-82 fiscal year, the Section provided the Regions with the following support for municipal plan reviews:

- Prepared and issued five new chapters for a Land Use Plan Review Handbook;
- Conducted a two-day seminar on land use planning;
- Undertook preliminary work on the development of policy statements to be issued under the new Planning Act; and,
- Developed a pilot system for monitoring the municipal plan review program.

In July of 1981, Staff also began to co-ordinate the Ministry's review of EAs. This involves arranging pre-submission consultation as well as the review of formal submissions. Twenty-two draft EAs and nine formal submissions were reviewed.

Project Co-ordination Branch

Director: J.C.F. Macdonald

During 1981-82, the Project Co-ordination Branch handled 149 construction contracts and administered a capital expenditure of approximately $99.5 million. Of this amount, 33.0 per cent was paid out as subsidies under the Ministry's construction program for municipalities. In addition, the Branch is responsible for the administration and budgeting of the Ministry's:

- Direct grant program for providing grants to assist the construction of municipally-owned water and sewage facilities (1981-82 expenditure $52.5 million); and,
- The grant program for repair and renewal of private sewage and water systems in small communities (1981-82 expenditure $4.4 million).

Project Management

During the fiscal year, the Section completed its administration of the funds provided by the federal government's Community Services Contribution Program (CSCP). In 1981-82 the CSCP grants totalled $51.6 million.

In the West Central Region, construction continued on the Haldimand-Norfolk Provincial Area Water Supply System and additional work was done on the trunk watermain to Hagersville and Jarvis.

In the Central Region, design and construction continued on the $40 million sewage works and water works program for the community of Keswick in the Township of Georgina. Work on the first seven contracts previously awarded and valued at approximately $9.5 million was virtually completed during the year. Contracts for the water treatment plant and the water intake valued at $3.89 million were commenced. The tender call for the sewage treatment plant was delayed due to the difficulties in completing property acquisitions.

Construction was almost completed on the $16 million Wasaga Beach sewage works and water works program with funding provided by the Ministry of Natural Resources.

Construction continued on the sludge processing works at the Lakeside sewage treatment plant of the South Peel Sewage System. Expenditures for the year were $13 million.

In view of the structural deterioration of a number of concrete elevated water storage tanks, the Ministry appointed a structural engineering consultant to investigate and report on the problems. An interim report was completed in February, 1982 identifying about 20 Ministry tanks requiring rectification work. Repair work on the concrete elevated tank at Amherstberg was completed in October, 1981.

Northern Projects

Projects in Northern Ontario continued to receive financial assistance from the Ministry of Northern Affairs to accelerate infrastructure development. Approximately $3.0 million was provided by Northern Affairs for direct administration by the Branch to assist 25 of these projects.

Two subsidy agreements under the General Development Agreement of the DREE/RPB (Department of Regional Economic Expansion/Regional Priority Budget) program continued to be administered by management committees, which include representatives from DREE, the Ministry of Northern Affairs, the Ministry of Intergovernmental Affairs and the Branch's Project Manager for the particular Region.

The Northwestern Management Committee administers a $50.8 million program that includes sewage improvements in Thunder Bay and Ignace. The Northeastern Management Committee administers a $30.0 million program that includes services for industrial parks in Parry Sound, Sudbury and North Bay, as well as infrastructure in Timmins. The

DREE/RPB program also included expenditures for infrastructure projects for single industry resource-communities such as Nakina, Longlac, Geraldton, White River and Hornepayne.

York-Durham Projects

In November 1981, three more existing sewage treatment plants were taken out of operation and flows were diverted from the Metro system. In addition, the incinerator facilities at Duffin Creek went into operation.

With the exception of a watermain to supply Woodbridge East and a short length of watermain in Richmond Hill, the basic York Water System was completed.

During the 1981-82 fiscal year, over $23.1 million was spent on the York-Durham sewage system and approximately $5.7 million on the York water system.

Design and Equipment Review

This Section reviews and evaluates for approval purposes, design submissions received from consulting engineers for all sewage and water projects where contracts are to be awarded or managed by the Ministry.

Staff processed approximately 108 submissions during the fiscal year.

Project Control

This Section monitors and records commitments and expenditures for direct grant projects and Provincial programs for sewage works and water works and advises on the scheduling of contracts to meet budgetary requirements. Various statistics on costs are compiled as required.

(See Tables 1 and 2 at the end of this section and Graphs 1 to IV in Appendices.)

Claims and Contracts

This Section handles disputed claims for payment made by contractors, third parties, etc. in relation to projects financed or managed by the Ministry and assists in arbitration or litigation arising from such claims. The Section investigates technical and contractual bases for claims and reviews matters with consulting engineers and expert witnesses.

The Section receives tenders, reports on tenderers' financial statements to senior management, carries out documentation related to the awarding of contracts and arranges for the execution of agreements.

Staff receive Notice of Claim under the Mechanics' Lien Act, maintain a Register of Claims, provide the basis for the Crown's defence in any mechanics' lien trial and assist in the resolution of lien claims whenever possible.

During 1981-82, nine disputes were in active litigation, three in reference to arbitration, and approximately 10 others were dealt with at an administrative level.

Special Activities

The Unit provides special inspection of construction, investigation of unusual construction problems, administration of the Ministry's prequalification system for concrete sewer pipe plants and a number of support functions for the Branch.

Approximately 100 field inspections of Ministry sewer and water works projects were carried out during the fiscal year and 30 man-days were spent on the investigation and resolution of special construction problems.

The Ministry and the Municipal Engineers' Association again sponsored the Construction Inspectors' Courses (Nos. 1 and 2). Approximately 60 representatives from municipalities and engineering companies attended the week-long courses.

Staff continued to review and draft standards and specifications and to evaluate new products proposed for incorporation into Ministry works.

Field Services

This Section is composed of specialists in mechanical and instrumentation equipment fields, who can advise on new and operational sewage and water works installations.

Staff also provide an emergency service as required and carry out maintenance audit inspections on operational plants.

During the fiscal year, roughly 62 per cent of staff time was spent on the capital works program and 38 per cent on operational installations.

TABLE I

PROJECT CO-ORDINATION BRANCH

Volume of activity under Capital Construction Program during 1981-82.

1.	**Capital Expenditure**		$99,501,000
	Sewage Works		82,943,000
	Water Works		16,558,000
	Provincial Projects		98,031,000
	Municipal Projects		1,470,000
	Provincial Subsidy		32,854,000
	% of total expenditure		33.02%
2.	**Construction – Ministry Projects**		
	Contracts Tendered	– No.	40
		Value	$58,700,000
	Contracts Started	– No.	43
		Value	66,204,000
	Contracts Completed	– No.	85
		Value	91,357,000
	Contracts Under Construction During the Year		149
	Average Number of Contracts Under Construction in each month		67
3.	**Construction – Project Management (Direct Grant)**		
	Contracts Tendered	– No.	8
		Value	$7,226,000
	Contracts Started	– No.	9
		Value	7,760,000
	Contracts Completed	– No.	15
		Value	9,651,000
	Contracts Under Construction During the Year		19
	Average Number of Contracts Under Construction in Each Month		5

TABLE II

PROJECT CO-ORDINATION BRANCH

Grants to municipalities for sewage works and water works during 1981-82.

1.	MBR priority evaluations			
	(1) Direct Grant Program requests		47	
	Ruled eligible		27	
	Rejected		20	
				Total
	(2) Private Systems Program requests		33	Evaluated
	Ruled eligible		25	80
	Rejected		8	
2.	Direct Grant Program payments (15% to 75% grants)			$52,242,000
3.	Private Systems Grant Program payments (75% grants)			$ 4,414,000
4.	Federal CSCP Grant commitments for payment in 1981-82 (administered by MOE)			$51,600,000

Waste Management Branch

Director: C. J. Macfarlane

Experimental Plant for Resource Recovery

The plant was in full operation throughout the year. There were no incidents of explosion during the year, likely the result of improved inspection of waste receipts and redirection of loads containing potentially hazardous materials to appropriate disposal facilities. The venting of the shredder proved effective in minimizing damage in the event of an explosion.

Browning-Ferris Industries were rehired as the contract operators for a further five years.

Marketing and Development

The Branch continued to develop markets for the products of the Experimental Plant during 1981-82.

Possible uses for the light fraction or refuse-derived fuel (RDF) from the plant continued to be investigated. A run of RDF was conducted at Canada Cement La Farge in Woodstock to test a new material handling system. Previous long term runs had successfully demonstrated the use of RDF in cement kilns in that there were no problems connected with either the cement or air quality. Testing will continue to improve the material handling aspects of RDF, an important factor in designing permanent RDF feed systems for cement kilns.

The Brampton Brick Co., with Ministry funding, completed the first stage of its investigation into the addition of mulched light fraction to brick as a burn-out fuel in clay brick manufacture.

A new mini-steel mill, Courtice Steel, investigated the use of the Experimental Plant's recovered ferrous in a densified form (baled) and found this material to be acceptable ferrous scrap.

Compost from the plant was both sold and provided for demonstration or evaluation to potential users.

Source Separation

Project Paper Recycling is in its third year of operation. Approximately 12,000 government employees in the Toronto area are involved in recovering fine office paper.

Project Paper Recycling had a gross revenue of $23,000 for 1981 and removed 211 tons of paper from the solid waste stream.

Inquiries were received from over 500 universities, banks, private sector offices, and municipalities on setting up similar projects.

Source Separation Grant Program

An incentive program for source separation in municipalities and private companies was initiated in 1981. The Ministry provides 50 per cent of the cost of carrying out a feasibility study. If the study indicates a viable project, the Ministry will provide assistance for promotion and is prepared to make up any financial losses incurred during the early years.

Twelve companies and municipalities were involved in the program during the year.

Waste Management Studies

The Ministry offers a 50 per cent subsidy to municipalities to encourage them to undertake long term planning studies for waste management within their communities.

In the 1981-82 fiscal year, 10 studies were active, three were completed and seven studies initiated.

Waste Management Improvement Program

In 1981-82, 105 municipalities received subsidies to upgrade or close their waste disposal sites for a total cost of $500,000.

Site Identification Study

Consultants were hired to carry out verification studies on 11 abandoned waste disposal sites, revealed through Ministry studies.

Staff initiated work on a plan for the perpetual care of disposal sites. This plan ensures that funds would be available, during the life of the site and into perpetuity, for any remedial action that may be required and to compensate for any damages.

Energy from Waste Studies

Environment Ontario and the Ministry of Energy are carrying out 12 projects across the Province using wastes to produce energy.

Disposal of Liquid Wastes

The Ontario Waste Management Corporation decided against the location of a major liquid waste disposal facility in South Cayuga. It is actively pursuing possible alternative sites.

The waybill system for monitoring the movement and disposal of liquid industrial wastes was expanded through the use of a new data processing system.

The following regulations were prepared during the 1981-82 fiscal year:

- A regulation to legalize the use of existing landfill sites for the disposal of some types of liquid industrial wastes, pending the completion of properly designed treatment facilities;
- A draft regulation to provide additional controls on generators, particularly with regard to solid chemical wastes not included in the existing waybill system; and,
- A regulation to establish safe standards for the handling and storage of PCBs.

PCB Handling and Storage

The Branch has provided funding to outside agencies working on techniques for the destruction of PCBs.

Radioactivity

Environment Ontario is working with the federal government on guidelines and criteria for the most effective means of disposing of low level radioactive wastes, many of which are produced as a residue of common industrial processes.

Hazardous Contaminants Office

Co-ordinator: C.E. Duncan

The Hazardous Contaminants Office was officially established in May, 1980 to develop and maintain a comprehensive and coherent program related to hazardous contaminants in the context of other environmentally related programs in Ontario; to provide liaison with federal, provincial and other agencies and committees; and, to co-ordinate all the research programs within the Ministry related to hazardous contaminants.

Two program co-ordinating committees were established: the Hazardous Contaminants Co-ordinators Committee (HCCC) and the Hazardous Contaminants Management Committee (HCMC).

The Co-ordinators group is composed of representatives from seven Branches and all the Regions. It is responsible for developing short and long range plans in relation to hazardous contaminants. The Management Committee, chaired by the Executive Director, is composed of Directors and reviews all matters raised by the Co-ordinators Committee, approves appropriate activity and recommends approval of required resource allocations.

During the 1981-82 fiscal year, the Office evaluated a number of chemical assessment schemes to develop a list of chemicals of concern. The Office has adopted the chemical assessment approach advocated by the State of Michigan as a preliminary environmental health effects assessment for these chemicals.

As part of the Office's information program, a Hazardous Contaminants Library has been developed. A bibliography on current acquisitions is circulated to the Branches and Regions and on-line capability to two computer data bases on toxic substances is available.

In addition, Environment Ontario and the Ministries of Health and Labour formed an Environmental Health Committee. A major accomplishment of this Committee was the development and implementation of a protocol for a request for medical assistance.

Acidic Precipitation In Ontario Study

Co-ordinator: E.W. Piche

The Acidic Precipitation in Ontario Study Office (APIOS) was established in 1979 to co-ordinate all of the Ministry's activities relating to acid precipitation.

During the 1981-82 fiscal year, Environment Ontario continued to operate the two networks of monitoring stations set up in 1980 to measure fallout and to identify sources of acid rain throughout the Province.

The two networks are complementary but yield different information. One is designed as a "true event" network sampling precipitation and particulate matter on a daily weather basis. The other is a "cumulative" network sampling precipitation and particulate matter on a monthly basis. Both are designed to collect wet and dry depositions. All samples collected are analyzed at the Ministry's Toronto laboratories.

In 1981, a report containing information on all of the lakes sampled in the Province was released. An update was issued in early 1982. The public now has access to acid precipitation data relating to 1,600 Ontario lakes. A more technical report was also sent to public libraries, universities and the Ministry's District Offices.

A calibrated watershed study continues in the Muskoka/Haliburton area to measure the amounts of acids and other materials entering and leaving lakes.

A terrestrial program was initiated to survey soils and vegetation to determine trends in acidification. Acid rain was simulated in a number of experiments to study its impact on soils and certain species of crops.

Socio-economic studies also continued throughout the year. The Amenity Value Survey was designed to determine the public's willingness to pay for environmental clean-up. Other studies dealt with the effects of acid precipitation on the tourist industry and the cost effects of acid rain in other areas, such as agriculture and forestry.

An Ontario/Canada Task force was established to identify and enumerate the environmental, economic and social consequences of alternative air pollution abatement options, which will assist in making policy decisions relevant to the Inco and Falconbridge smelting operations in the Sudbury area.

The Ministries of the Environment and Natural Resources announced a joint five year experimental study on the neutralization of acidified lakes. The actual neutralization of the lakes selected began in the summer of 1982.

In the spring of 1981, Environment Ontario filed a legal intervention with the U.S. Environmental Protection Agency (EPA) which asked the EPA to reject proposals from six states for a relaxation of emission limits governing 20 power plants. By the end of the fiscal year, the EPA had proposed approval of 11 relaxations, refused seven and remained undecided on two.

In June of '81, the Ministry filed another petition with the EPA and delivered oral and written briefs in support of the States of New York and Pennsylvania concerning interstate pollution.

Later the Ministry also filed an intervention with the State of Indiana Pollution Control Board regarding a submission by a coal generating station seeking to increase its emissions. The Board approved the request by a narrow margin.

In addition, the APIOS Office was involved in a series of tours of the Muskoka/Haliburton Region, Toronto and Ottawa arranged by the Ministry for groups of visitors from the U.S. The delegates included representatives from the media and members of the staffs of senators and congressmen engaged in the review of environmental legislation.

regional operations and laboratories division

Assistant Deputy Minister – W.B. Bidell

The Regional Operations and Laboratories Division is responsible for policy implementation and the delivery of Ministry services to the public.

This includes environmental protection activities such as abatement programs and complaint investigations, regional environmental assessment activities and the operation of sewage, water and waste projects.

Environment Ontario has divided service to the Province into six Regions: Northwestern, with an office in Thunder Bay; Northeastern, with an office in Sudbury; Southwestern, with an office in London; West Central, with an office in Hamilton; Central, with an office in Metropolitan Toronto; and Southeastern, with an office in Kingston.

These Regional headquarters are supplemented by 23 District Offices across the Province.

Both the District and Regional Offices play a key role in making the Ministry conveniently accessible to municipalities, the public and the organizations which are involved in or affected by its services.

A considerable amount of authority and responsibility is delegated to the Regional Director in the Regional Office. This Office also provides a strong base of administrative rapport and technical expertise to back up the delivery of services within the Region.

The program in the Region is carried out by four sections: Industrial Abatement; Municipal and Private Abatement; Technical Support (Planning and Approvals; Air Quality Assessment; Water Resources Assessment and Laboratory); and, Utilities Operation.

In addition, the Division provides analytical and research support to the Ministry through the operation of Provincial and Regional environmental laboratories.

Northwestern Region

Director: R.M. Gotts

Industrial Abatement

During the 1981-82 fiscal year, two Control Orders were issued requiring both water pollution and air emission abatement. The companies involved anticipate spending approximately $42 million in the completion of these Orders.

Staff investigated 54 spills and 175 complaints. Routine inspections dealt primarily with the pulp and paper industry and the mining industry.

The Region is continuing to use a mobile toxicity testing laboratory to carry out extensive toxicity tests on effluent samples from all the pulp and paper companies and operating mines plus selective industries. To date over 100 toxicity tests have been conducted. The results of these studies will lead to new requirements in Control Orders and will indicate any improvements in the effluents.

Two new mines are being developed in the Shoal Lake Area, southwest of Kenora. Staff are working with the mining companies and the Province of Manitoba, which draws its drinking water for Winnipeg from that area, to ensure that the mines' operations will be environmentally safe. An inter-ministerial committee representing both Provinces has also been established.

Pulp and Paper

Abatement work proceeded with the eight pulp and paper mills who are under Ministry Control Orders. Significant staff time was spent in reviewing applications for approvals and carrying out audit surveys.

The Region also successfully prosecuted four major industries for excessive discharges into watercourses.

Regional & District Offices

NORTHWESTERN REGION

Thunder Bay Regional Office,
435 James St. S.,
Thunder Bay P7C 5C6
Tel.: 807/475-1205

Kenora District Office,
808 Robertson St.,
Kenora P9N 1X9
Tel.: 807/468-5578

NORTHEASTERN REGION

Sudbury Regional Office,
199 Larch St.,
Sudbury P3E 5P9
705/675-4501

Timmins District Office,
83 Algonquin Blvd. W.,
Timmins P4N 2R4
Tel.: 705/264-9474

Sault Ste. Marie District Office,
445 Albert St. E.,
Sault Ste. Marie P6A 2J9
Tel.: 705/949-4640

North Bay District Office,
1500 Fisher St.,
Northgate Plaza,
North Bay P1B 2H3
Tel.: 705/476-1001

Parry Sound District Office,
74 Church St.,
Parry Sound P2A 1Z1
Tel.: 705/746-2139

CENTRAL REGION

Toronto Regional Office,
150 Ferrand Dr.,
Don Mills M3C 3C3
Tel.: 416/424-3000

Barrie District Office,
12 Fairview Rd.,
Barrie L4N 4P3
Tel.: 705/726-1730

Muskoka-Haliburton District Office,
Gravenhurst P0C 1G0
Tel.: 705/687-3408

Peterborough District Office,
139 George St. N.,
Peterborough K9J 3G6
Tel.: 705/743-2972

Halton-Peel District Office,
1226 White Oaks Blvd.,
Oakville L6H 2B9
Tel.: 416/844-5747

Huntsville Sub-Office,
100 Main St. E.,
Huntsville P0A 1K0
Tel.: 705/789-2386

SOUTHWESTERN REGION

London Regional Office,
985 Adelaide St. South,
London N6E 1V3
Tel.: 519/681-3600

Windsor District Office,
250 Windsor Ave., 6th Floor,
Windsor N9A 6V9
Tel.: 519/254-5129

Sarnia District Office,
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Suite 209 S.,
Sarnia N7T 3W4
Tel.: 519/336-4030

Owen Sound District Office,
1180 Twentieth St.,
Owen Sound N4K 6H6
Tel.: 519/371-2901

Chatham Sub-District Office,
435 Grand Ave. W.,
Chatham N7L 3Z4
Tel.: 519/352-5107

WEST CENTRAL REGION

Hamilton Regional Office,
119 King St. W.,
Hamilton L8N 3Z9
Tel.: 416/521-7640

Cambridge District Office,
400 Clyde Rd.,
Cambridge N1R 5W6
Tel.: 519/623-2080

Welland District Office,
637-641 Niagara St. N.,
Welland L3C 1L9
Tel.: 416/735-0431

SOUTHEASTERN REGION

Kingston Regional Office,
133 Dalton St.,
Kingston K7L 4X6
Tel.: 613/549-4000

Ottawa District Office,
2378 Holly Lane,
Ottawa K1V 7P1
Tel.: 613/521-3450

Cornwall District Office,
4 Montreal Road,
Cornwall K6H 1B1
Tel.: 613/933-7402

Belleville District Office,
15 Victoria Ave.,
Belleville K8N 1Z5
Tel.: 613/962-9208

Pembroke District Office,
1000 MacKay St.,
Pembroke K8A 6X1
Tel.: 613/732-3643

Municipal and Private Abatement

One major sewage project was completed in the Northwestern Region in 1981-82 (see Appendices).

Regional Staff dealt with three communities, the Townsites of McLeod and Hardrock and the Community of Madsen, under the Private Systems Grants Program. In all cases new water lines were installed to replace old deteriorated lines. In the McLeod and Hardrock townsites their water lines were connected to the Town of Geraldton water supply system.

A municipal waste disposal site serving the Town of Kenora and the Township of Jaffray-Melick reached capacity and was closed during the year. A tri-municipal site, designed to serve Kenora, Jaffray-Melick and the Town of Keewatin was opened. Nine sites owned and operated by the Ministry of Natural Resources were also closed and seven others opened.

Six waste management studies were completed in the Region, primarily to investigate leachate migration.

Staff were involved in the approval of 10 septic tank systems in unorganized areas. Related septic tank approvals in these specific areas come under the responsibility of the Northern Ontario Public Health Service; however, due to the lack of manpower the Ministry was asked to assist in this program.

Two hundred and seventy-five cottages were inspected in theThunder Bay District under the Cottage Pollution Control Program. Remedial work was required on 60 septic tank systems.

A water quality study was completed on Kenogamisis Lake which serves as a water supply for two communities. Concern had arisen about arsenic leachate to the Lake from an abandoned gold mine.

Rehabilitation work on the sewage collection system was completed in Red Lake. A major reduction in sewage flows has been experienced through the elimination of the infiltration/inflow to the system.

In late 1981, phosphorus removal equipment was installed at Thunder Bay's sewage treatment plant. This has led to a reduction of phosphorus levels in the effluent ultimately discharging to Lake Superior.

Utility Operations

During the fiscal year, the operating responsibilities of the water and sewage systems of the Town of Keewatin and the water system of the Township of Machin reverted back to the municipalities.

The Region operated 11 water and 15 sewage projects serving approximately 16,000 people with water and over 32,000 people with sewage collection and/or treatment services.

Air Quality

The Region continued routine air quality monitoring, phytotoxicology (vegetation) and snow sampling surveys throughout the year, with particular

emphasis on areas surrounding mining and forest product industries.

The year's highlights included:

- Commencement of a pre-operational monitoring program in the vicinity of Ontario Hydro's thermal generating station at Atikokan. This 200-megawatt power plant is scheduled for commissioning in 1984.
- Expansion of the air quality network to Red Rock and Terrace Bay, in support of Ministry abatement programs in local kraft pulp mills.
- Development of a comprehensive study on the effects of acid precipitation on vegetation and soils in Northwestern Ontario.

In addition, a regional air quality report was released which identified major improvements in air quality in many of the communities surveyed, substantiating the effectiveness of Ministry abatement action.

Water Resources

The Unit continued its monthly sampling of 40 lake and river stations. The stations are concentrated in areas where water quality is affected by industrial and urban activities. In addition, 10 stations were regularly sampled in support of the International Joint Commission's (IJC) program to monitor the quality of water in Lake Superior and the Rainy River.

Twelve lakes were sampled in 1981 under the Regional Lake Inventory Program, which is designed to assess lake water quality relating to potential recreational development. Detailed investigations of sensitive fish habitat, were conducted on two lakes.

Five water quality surveys were conducted in relation to new or rejuvenated mining activities.

As part of the Acidic Precipitation in Ontario Study (APIOS), 490 lakes were sampled throughout the Region to evaluate the relative sensitivity of Northwestern Ontario lakes to acidification.

Approvals and Land-use Planning

During the 1981-82 fiscal year, Staff reviewed proposals for subdivision plans, official plans, amendments and bylaw reviews.

A groundwater report assessing the development potential of estate residential areas in the new Thunder Bay Official Plan was prepared for submission to the City and the Ministry of Housing. Extensive assessment and review was conducted on the City's noise-related development restriction area around the Thunder Bay airport.

Staff were involved in environmental assessments for forest management and for the Little Jackfish River Hydro project. Both developments will significantly affect Northwestern Ontario, both economically and environmentally, and extensive Regional involvement will be required for several more years.

Pesticides

During the year, there was a slight increase in the number of exterminator licences and permits for herbicide use issued. This is the result of new forest management agreements, which have shifted the responsibility for reforestation programs from the Ministry of Natural Resources to the individual companies.

In January of 1982, the Region sponsored a training seminar for 50 licensed exterminators working in terminal grain elevators.

Laboratory

The Thunder Bay Regional Laboratory provides chemical and microbiological analytical support for the Northwestern Region. In addition, the Laboratory provides analytical support for the fluoridation and sulphation rate monitoring programs of other Regions.

During the 1981-82 fiscal period, the Laboratory performed 119,000 analyses. The Chemistry Unit carried out 89,000 analyses on 14,000 samples while the Microbiology Unit undertook 30,000 analyses on 13,000 samples. Analytical test loading in the Chemistry Unit increased by 17 per cent over the previous year while analytical test loading in the Microbiology Unit remained at the same level as the previous year.

New chemical analytical capabilities were established for aqueous molybdenum and low level total mercury analyses, and a modified analytical procedure was implemented for aqueous calcium and magnesium analyses. In addition, analytical development studies are nearing completion for aqueous methyl mercury analysis.

In support of a major survey to delineate the Kimberly-Clark, Terrace Bay effluent plume, the capability to quantitively concentrate E. coli and Klebsiella sp. in pulp and paper effluents was developed. Several laboratory techniques were slightly modified as part of an ongoing effort to enhance analytical accuracy and laboratory efficiency.

Special Activities

The Northwestern Region was the first Region to acquire a computer and to computerize most of its routine operating activities.

The computer system allows staff to store, modify and retrieve information on water quality, precipitation, spills, complaints, hazardous contaminants, industrial monitoring, both Ministry and municipal wastewater and water treatment plants, air quality, and on control orders issued against a specified company.

Plans are underway to extend the system to the Kenora District Office and to expand the number of terminals in the Regional Office.

Northeastern Region

Director: C.E. McIntyre

Industrial Abatement

During the 1981-82 fiscal year, a Director's Order was issued to control the disposal of woodwaste at a newly opened sawmill belonging to the Green Cedar Lumber Company. Legal action was later taken for non-compliance with the Order and the company was fined $4,000. Staff were involved in the negotiations and public meetings held in connection with an amendment to a Control Order for Spruce Falls Pulp and Paper Co. Ltd.

Levesque Plywood Ltd. and Canadian National Railways were successfully prosecuted for violating Control Orders. The convictions resulted in fines of $4,500 and led to the installation of abatement facilities costing approximately $1.8 million.

Staff participated in consultations regarding the development of six new gold ventures. Due to depressed gold prices, several of these and two other existing operations were temporarily shut down.

Texasgulf, now Kidd Creek mine, opened its $400 million copper smelter. This facility provides for more than 95 per cent containment of sulphur dioxide emissions.

The Elliot Lake Uranium Mining Camp is meeting the requirements of its Direction Orders issued under the Ontario Water Resources Act. As a result, the water quality of the Serpent River system and Quirke Lake continues to improve.

An investigation was conducted into a number of particulate fallout incidences in Sudbury during the summer of 1981, which coincided with the summer shutdown of the Inco Copper Cliff Smelter and Iron Ore Recovery Plant. Over 100 property damage complaints were received from the public. Although the exact cause of the fallout is still unknown, the investigation has indicated possible remedial activities and suggests areas of additional study. Inco has been requested to submit a proposal for alleviating the fallout problem during its 1982 shutdown.

As required by a previously issued Director's Order, E. B. Eddy Forest Products applied for a Certificate of Approval for new odour and particulate control facilities to be installed by December of 1983. These facilities are part of the modernization/expansion program underway at the Espanola mill.

In June of 1981, a major CNR derailment occurred in the Village of Sundridge. Although most of the 100,000 gallons of gasoline and diesel fuel was lost through the resulting fire, Ministry staff supervised the removal of contaminated soil and some of the product which reached the underlying water table.

Staff are carrying out detailed field investigations on the North Bay-Mattawa phase of Trans Canada Pipelines' pipeline extension from North Bay to Morrisburg.

Staff handled a total of 707 complaints and 286 spill incidents of a minor nature.

Municipal and Private Abatement

Staff were involved in the completion of a private sewage funding project for Missanabie; in the continuation of programs for Whitefish/Den-Lou, Bonfield, and Nobel; and, for new programs in Mindemoya and the Townships of Johnson, Aweres and North Shore. Most of the programs involved the construction or correction of wells, septic tanks and tile beds.

A privatization contract was awarded to Greer, Galloway and Associates to carry out all of the Region's routine private sewage inspections in North Bay and Parry Sound. This was the first time that the Ministry has tried such a venture. It proved successful.

The Belle Vallee sewage plant, an innovative pollution control facility utilizing individual low pressure pumps feeding a common lagoon, was successfully put into operation to serve the community of 150 people.

Joint projects were undertaken by the Ministries of Northern Affairs and the Environment to test drill for water in the Community of Spanish and to construct a water distribution system for the Community of Serpent River.

Staff carried out an extensive investigation into the feasibility of re-establishing a fish population in Four Mile Creek. A train derailment in 1967, involving a spill of metal concentrates, had eliminated an earlier fresh water salmon fishery.

The Ministry of Natural Resources closed three waste management sites and improved five others.

Environment Ontario subsidized waste management studies in the Township of North Shore and in the Town of Little Current and provided funds to improve existing sites and close others in the Sault Ste. Marie District.

A Minister's Report, issued to the City of Sault Ste. Marie, requires the City to take the necessary steps in opening a new waste management site before the existing site is filled to capacity.

Under the Cottage Pollution Control Program, the septic tank systems of 629 cottages in the Township of Archipelago were inspected during the summer of 1981. Thirty-seven of these were identified as having major problems and orders were issued to the owners to have the systems repaired or replaced.

During the year, Staff investigated 105 spills and 508 complaints.

Air Quality

The Northeastern Region operates an air quality network consisting of approximately 145 monitors.

Staff also maintain vegetation surveillance studies throughout the Region on the degree and extent of air pollution injury to vegetation.

During the fiscal year, Staff responded to 119 complaints regarding suspected air pollution injury to vegetation.

Water Resources

The Region maintains 160 water quality stations across the Region, including 38 in the Elliot Lake area.

A study on waste assimilative capacities and aquatic biological impact was completed on pulp and paper rivers. A large recreational lake evaluation program continues in the North Bay/Parry Sound areas.

Inspections were carried out on 1,000 newly drilled wells to ensure compliance with regulations.

The Groundwater Unit evaluated 30 landfill sites for approval and licensing.

Approvals and Planning

In 1981-82, the Unit reviewed 55 quasi approvals under various pieces of legislation, 40 environmental assessment and study reports and 40 landuse planning documents. Thirty Certificates of Approval for landfill and organic soil conditioning sites were issued. Forty applications for Water Taking Permits were reviewed and Permits issued.

Pesticides

Staff investigated 17 pesticide related complaints and inspected the premises of 246 licensed retail and wholesale pesticide vendors.

A two-year study into pesticide residues in wild berries from rights-of-way spray operations was completed and a report is being prepared.

A monitoring program was undertaken to examine the levels of residues of 2,4-D from a Ministry of Natural Resources conifer release program in Adam's Township. The program will give Environment Ontario general background residue data on aerial herbicide programs.

Ten water extermination permits were issued for the control of nuisance aquatic weeds and blackflies. Five special use permits were issued for the control of bats and bees.

Utility Operations

During the fiscal year, the Region operated 22 water treatment plants and 43 water pollution control facilities serving a population of approximately 245,000.

Two water treatment and two water pollution control facilities were also completed (see Appendices).

The sludge utilization program continued with the approval of sites and systems for 12 water pollution control plants. Sludge disposal sites were also approved for five plants.

Southwestern Region

Director: D.A. McTavish

Industrial Abatement

During the year, industry in the Southwestern Region spent $13.6 million on air pollution abatement measures and $23.5 million on water.

In the early 1970's, all industries in the Sarnia area were brought into compliance with the regulations regarding sulphur dioxide emissions. For the most part, this resulted in a significant improvement

in the ambient levels of sulphur dioxide measured in the Sarnia area. However, during prolonged periods of southerly winds, the objective for this pollutant continued to be exceeded. This occurred because of the geographic alignment of numerous major industries along the St. Clair River.

To overcome the problem, the Ministry developed a new regulation in early 1981, which requires that industries reduce their sulphur dioxide emissions when the level of the pollutant measured at any one of four monitoring stations in the Sarnia area reaches 0.07 parts per million and weather which is conducive to the elevated levels is forecast for at least a six-hour period. The Lambton Industrial Society and industries in the Sarnia area fund the air monitoring activity and maintain the system.

Since the implementation of the new procedure, the air quality objective for sulphur dioxide has been exceeded only once.

In April 1981, the Ministry learned of the appearance of a black, tarry material which had seeped from the ground in a Sarnia Township schoolyard. Similar material had also been found on residential properties adjacent to the school. Investigations determined that wastes associated with the manufacture of styrene were disposed of in this location in the 1940's. At the time, the site was remote and residential development was not planned for the area.

The Ministry hired a soils consultant to carry out a drilling program to identify the area specifically involved and the depth to which the styrene tars were deposited. Once the location of the wastes was pinpointed, the school board engaged contractors to excavate, remove the wastes and restore the site with clean fill. The wastes were disposed of at industrial waste sites approved for the disposal of these types of wastes.

Municipal and Private Abatement

Twenty-two major water and/or sewage projects were completed in the Southwestern Region in 1981-82 (see Appendices).

Of the 206 applications for private sewage systems received, 196 were granted Certificates of Approval. In addition, 197 severance applications involving 378 parcels of land were inspected and reports prepared for the appropriate authorities.

Staff were also involved with four private sewage grant projects for the Township of Plympton, the Town of Bothwell and the Villages of Dorchester and Tiverton.

Thirteen waste management sites in the Region were improved at a cost of $70,000. The funds were provided to the municipalities through the Ministry's Waste Management Improvement Program.

The Ministry also funded 50 per cent of three feasibility studies for solid waste management projects in the Counties of Bruce, Kent and Essex.

A new landfill site, in an adjacent township, was approved for the City of Owen Sound.

In 1981, a two-year pilot study was begun on Fighting Island in the Detroit River just south of Windsor. Up until 1980, the 1,200 acre Island was used as an industrial waste disposal site by BASF Wyandotte. The City of Detroit now requests permission to ship its sludge to the Island. The City anticipates that the sludge will improve soil conditions. The pilot study is aimed at gathering information on the effectiveness of such a project through the use of small test plots. If the process is found viable, the project will be made subject to the Environmental Assessment Act.

Approvals and Planning

The Unit reviewed and responded to 153 land use planning submissions. Thirty-four new water taking permits were issued and 51 renewed. Eighty-two pit applications were reviewed representing a four-fold increase over the previous year due to the universal application of the Pits and Quarries Control Act. A total of 11 environmental assessment documents were circulated for comment and 10 responses were prepared to enquiries respecting application of the Regulations to specific undertakings. Five pipeline proposals were assessed and eight applications were co-ordinated by the Unit on 13 sewer and water projects.

The Unit played a lead role in the preparation of guidelines for treating fish hatchery effluent and the regulation of their treatment facilities under the Ontario Water Resources Act.

Air Quality

The Region maintains 107 monitoring stations, including 80 instruments to monitor total suspended particulates, 79 continuous monitors and 78 monthly sampling monitors for dustfall and fluoridation.

Staff issued three major reports on the air quality of the Sarnia and Windsor areas and on Michigan-Ontario transboundary pollutants.

The following special studies were undertaken during the fiscal year:

- Particle size studies were initiated in Windsor;
- A hydrocarbon study was conducted in South Sarnia;
- An investigation of the impact of grain elevators on dustfall levels in Goderich was concluded;
- Studies on the various sources of suspended particulate levels in the Beachville area were intensified; and,
- Monitoring for radioactive particulates was continued in the vicinity of the Bruce Nuclear Power Development site.

Water Resources

Throughout the 1981-82 fiscal year, the Region continued its monthly monitoring of more than 130 river sites.

Groundwater Staff worked with the Water Resources Branch to map the sensitivity of groundwaters to pollution. Maps were completed for 15 per cent of the Region.

Increased emphasis was placed on the threat of agricultural activities to groundwater quality and the Region worked with other agencies to formulate guidelines for safe manure storage.

Considerable time was spent on landfill site investigations. At several sites, off-site leachate migration was noted, although in most cases, there was no affect on nearby wells.

Approximately 1,500 wells were inspected and sampled, either through the complaint-response program, or the well inspection program. The Region worked with the Ministry of Transportation and Communications to restore wells contaminated with road salt. The Region also evaluated radioactivity levels in municipal well supplies, drawing on deeper aquifers. The radioactivity is the result of natural geological conditions.

The Surface Water Unit increased its focus on agricultural impacts on water quality. Water quality of the intensively farmed Avon River Basin was assessed as part of the Stratford-Avon River Environmental Management Project.

A major study on Rondeau Bay revealed that agricultural drains and agricultural landuse practices must take greater account of soil conservation and environmental protection measures.

Studies carried out in the Bighead and Beaver watersheds in Grey County confirmed the high quality of waters in the northern part of the Region, and hence the need for protection. As fish hatcheries threaten stream quality in the Grey-Bruce area, the effluents from several hatcheries were assessed.

Monitoring of the Listowel artificial marsh continued.

Laboratory Operations

The London Regional Laboratory performed 176,971 chemistry tests on 19,718 samples and 50,288 microbiological tests on 16,972 samples.

Aeromonas hydrophila was added to the list of parameters available in the Microbiological Section.

Utility Operations

The Section operates 99 treatment facilities including 48 lagoons, 26 water supplies (17 are surface water sources) and 25 mechanical sewage treatment plants, serving a population of 740,000.

West Central Region

Director: G.H. Mills

Industrial Abatement

One Control Order and an Amending Control Order was issued to Stelco's Hamilton works. The Order covers abatement of both air and water discharges, the cost of which is projected at $73 million. Dofasco continues to be in compliance with the Control Order it received in 1980.

Staff investigated over 2,100 complaints and 71 spills. Many of the complaints were associated with odour emissions. A number of special studies involving Ministry staff and medical staff from the Ministry of Labour are being carried out in this area.

Sixty-eight Certificates of Compliance were issued to farms.

Several industries in the Region carried out environmental control activities. The following is an outline of some of these:

- The Ontario Rendering Company Ltd., in Dundas, installed a new three-stage chemical scrubbing system;
- Rothsay Concentrates Company Ltd., in Rothsay, completed a program of upgrading and installation of new chemical scrubbers;
- Rothsay Concentrates started construction of a new wastewater treatment facility scheduled for start-up in the summer of 1982;
- Ontario Paper Company, Thorold, installed an activated sludge wastewater treatment plant;
- General Abrasives Company developed and installed new technology for the manufacture of silicon carbide. The manufacture of this product by abrasive industries has long been a source of particulate and gaseous emissions in the Niagara area. Once this facility is operating satisfactorily, it will replace a number of old conventional furnaces; and,
- Cyanamid Inc. achieved control of particulate emission from its fertilizer mill tower and phosphine emissions from another process. It is continuing with an installation to meet requirements of a Control Order on its Welland plant.

While investigating an old disposal site in Cambridge, staff detected contaminants in several private wells. Municipal water supply was provided to the homes affected and paid for by the industries involved.

A vegetable-pulp drying operation run by Niagara Drying Ltd. in Niagara Falls was a source of odour and particulate emission. As a result of a court injunction, the company ceased operations in April, 1981.

Municipal and Private Abatement

Eight Provincial water and sewerage projects were undertaken and completed in the Region during 1981-82 (see Appendices). Funding was provided to upgrade the water supply for St. Williams. Studies were also undertaken to assess the water supply and sewage disposal situations in New Dundee, Linwood, Lynden and Sheffield.

In 1981 Vineland was connected to the De Cew Falls (St. Catharines) water supply and construction was begun on a water supply line to connect the Town of Niagara-on-the-Lake to the City of St. Catharines water system.

The Woodward Avenue Sewage Treatment Plant in Hamilton is now meeting the Ministry's effluent requirements for phosphorus, BOD and suspended solids, following a three-year program of improving the plant's operations. In addition, filter backwash water from the Hamilton Water Treatment Plant is now being redirected to the sewage treatment plant instead of being discharged to Redhill Creek.

As part of their regular duties, staff inspect and monitor water supply and sewage treatment plants and waste disposal sites. A summary of the number of inspections is provided below:

Activity	Number of Plants/Sites*	Number of Inspections
Sewage Works	85	264
Waterworks	155	176
Waste Disposal (Landfill)	90	475
Waste Disposal (Sewage Sludge)	250	578

**These plants/sites are both municipally and privately owned or operated.*

Staff responded to over 830 complaints. Most of these involved odour, smoke or particulate emissions, landfill site conditions and watercourse contamination. In the past, smoke emissions from apartment house incinerators were a frequent cause of complaint. As a result, several years ago the Section initiated a stepped-up program of inspection of apartment house incinerators. Approximately 80 per cent of the apartments investigated were in Hamilton and the vicinity. During this period approximately 20 such incinerators were either forced to close or the owners chose to cease operations rather than upgrade their facilities to meet Ministry standards.

Tests carried out on the closed Kitchener Landfill Site indicate sufficient quantities of methane gas to supply the fuel requirements of a nearby cement plant for many years. The methane will replace the normal natural gas requirements of the company. The project should pay for itself in five years time.

In Hamilton-Wentworth, hydrogeological studies were completed on all old landfill sites and the sites were satisfactorily closed. They will be revegetated and then handed over to the area municipalities. Studies were completed on emissions from the Solid Waste Reduction Unit (SWARU) and the Regional Municipality is implementing the consultant's recommendations.

The Section spent 316 man-days in responding to spills and contingencies.

Staff issued a total of 90 permits relating to pesticides use, inspected the premises of approximately 250 wholesale and retail vendors and investigated 195 pesticide related complaints.

Staff inspected 264 pleasure boats to ensure compliance with the Ministry's regulation governing the disposal of sewage and garbage from pleasure boats. Six boats were found to be in violation.

Air Quality

The Region's air quality network consisted of 195 devices.

The following special air quality surveys or monitoring programs were undertaken:

- Upper Ottawa Street landfill site – Hamilton – air quality monitoring in the vicinity of the site and investigations into aerial transmission of toxic substances and heavy metals;
- Moody's Concrete Products, Ltd. – Lowbanks near Dunnville – nuisance fallout onto private property from a concrete batching plant;
- Robo's Gas Bar – Fort Erie – carbon monoxide and gasoline fumes from an enlarged service station;
- Dolime – Guelph – special survey for excessive amounts of lime dust onto private property;
- Hogg Fuel and Supply – Kitchener – nuisance fallout from a cement silo;
- Stelco Strike – Hamilton – commencement of data accumulation and methodology for a report on strike's effect; and,
- South Cayuga – planning and estimates for air monitoring in the vicinity of a proposed waste disposal facility for toxic substances.

Nineteen complaints, alleging vegetation damage due to industrial emissions, were investigated and

reported on by the Phytotoxicology Section of the Air Resources Branch. Fourteen were found to be due to natural causes; one was due to salt spray from highway de-icing operations; another was caused by rabbit manure runoff from a farm; two were attributed to the International Mineral Corporation in Port Maitland; and, the fifth to Cyanamid Ltd. in Welland.

The Hamilton Air Pollution Index equalled or exceeded the advisory level of 32 eight times during the year, for a total of 118 hours, including two occurrences during the Stelco strike.

The alert level of 50 was not reached. No values in excess of 32 were recorded in St. Catharines or Niagara Falls.

Water Quality

A stream water quality assessment was completed for the Credit River at Orangeville. A report was prepared and a presentation made to the Environmental Hearing Board on the expansion of the sewage treatment plant at Orangeville.

The water quality of Nanticoke Creek at Townsend and Waterford was also assessed in relation to discharges from the sewage lagoons serving the two municipalities. Studies on the Grand River and at Nanticoke on Lake Erie continued, as did the studies on stormwater and combined sewer overflow effects on Hamilton Harbour and Windermere Basin.

Staff began to study the effects of development pressures on the water resources of the Aberfoyle Creek basin. Major centres of groundwater pumping in the Aberfoyle area for a fish operation and a gravel pit have caused changes in streamflow and interference with numerous water wells and other water supplies. Restoration of affected supplies was completed.

Ninety water quality monitoring stations, six automatic streamflow recording stations, 10 manual stations and 20 observation wells were maintained.

A total of 178 water taking permits were renewed, comprising 166 for surface water and 12 for groundwater. Thirty-nine new permits were issued, 22 for groundwater and 17 for surface water sources.

Thirty-nine groundwater quality and quantity problems were investigated, each of which involved one or more wells. About 900 waterwell records were verified.

Staff investigated 12 fish kills and evaluated 15 marine construction proposals.

Environmental Planning

In 1981-82, Staff reviewed two proposed official plans, 77 proposed official plan amendments, two comprehensive zoning bylaws and 14 Environmental Assessment Act related documents and proposals.

Utility Operations

The Region was responsible for the operation of 35 sewage treatment facilities and five water supply systems. The sewage treatment facilities consist of a wide range of types from lagoons to activated sludge plants with tertiary treatment. Water was supplied from facilities using either ground or surface water as sources.

Special Investigations Unit

A Special Investigations Unit (S.I.U.) was established in the Region to provide enforcement capability with respect to the Acts and Regulations.

During the year, the S.I.U. conducted 34 investigations and assisted other Sections with an additional 20. Administration of a waybill program resulted in 299 waybills being investigated.

Niagara River Improvement Program

As a result of continuing public concern about Niagara River water quality, the Section has increased its monitoring and sampling program. The "Niagara River Improvement Team" was established, consisting of a co-ordinator and appropriate technical experts. The Team will address the quality of industrial and municipal discharges and the leaching of contaminants from landfill sites or other sources, adjacent to the Niagara River in Ontario and New York State.

Central Region

Acting Director: G. Mierzynski*

Industrial Abatement

During the year Central Region Staff issued five Control Orders requiring companies to install specific equipment or to take specific action under the Environmental Protection Act. A total of 274 spill incidents and 3,681 complaints were investigated. The majority of complaints concerned odours.

Numerous industries in the Region were involved in pollution abatement activities. The following is a brief outline of some of these projects:

- Eldorado Nuclear Ltd., Port Hope, has installed control equipment, costing approximately $1.5 million, at its Uranium Hexafluoride facilities to comply with the Provincial air quality criteria for fluoride emissions. The company is also engaged in an expansion of these facilities. At the request of the Ministry, the Atomic Energy Control Board has withheld approval of the construction application pending consideration of an accident analysis;
- The Raybestos Manhattan Company, Peterborough, completed major control facilities to reduce its emission of asbestos to meet Provincial guidelines;
- Gulf Canada at Clarkson has reduced its odour problems through the completion of a $1.8 million flare gas recovery system to reduce hydrogen sulphide and sulphur dioxide emissions;
- Anachemia Solvents Ltd., Mississauga, reduced its odour emissions by improving its product handling and tank farm dyking operations and by installing a computerized warning system for tank level control;
- The F.W. Fearman Company Ltd., Burlington, a slaughterhouse and meat processing plant, installed a chemical scrubber to reduce odour complaints;
- The St. Lawrence Cement Company, Mississauga, completed the installation of electrostatic precipitators on one of its kilns at a cost of $4 million to reduce dust emissions. In addition, $700,000 was spent on 30 baghouse installations to reduce dust emissions from loading facilities and transfer points;
- The West Cane Sugar Company, Oshawa, constructed a building for its bulk product storage at a cost of $2.5 million to prevent contamination of Oshawa Harbour;
- Ontario Hydro installed an oil precipitator at its Pickering Generating Station to minimize discharges from its oil storage handling areas at a cost of $108,000;
- St. Mary Cement Company, Bowmanville, installed baghouses at a cost of $135,000 to control dust emissions from its truckloading and product conveying systems;
- Surpass Chemicals Ltd., Scarborough, added drip traps and completed dyking in the tank farm area and installed an oil interceptor system to handle storm drainages from its plant yard at a cost of $350,000;
- Mintex Brake Product, Etobicoke, installed a new baghouse to control asbestos emissions at a cost of $135,000;
- Southam Murray printing, North York, installed catalytic incinerators to control odour and dust emissions from printing operations and installed a garbage compactor at a cost of $125,000;
- York Litho Ltd., Etobicoke, installed a catalytic incinerator to control odour emissions from its printing operations at a cost of $150,000; and,
- Jacuzzi Canada Ltd., Etobicoke, installed a new baghouse to control dust emissions at a cost of $100,000.

Staff handled four major spills during the year. In Medonte Township, a train was derailed and a fire broke out in the vicinity of a tank car containing anhydrous hydrofluoric acid. Staff were involved in on-site co-ordination activities to establish air quality and hazardous levels of gases and to develop a model for an evacuation zone in the event of gas escape. Staff also supervised the monitoring of streams and private wells and the disposal of the clean-up material.

Staff were also involved in the evacuation of the Yonge-Eglinton Centre in Toronto after a PCB transformer failure and in the subsequent clean-up action.

A warehouse fire in downtown Toronto, involving approximately 80 drums of nitro cellulose material, resulted in the release of toxic gases and an explosive condition. The surrounding area was evacuated.

Extensive clean-up work was undertaken after lightning struck an Ontario Hydro transformer in Toronto exploding two PCB transformers and 160 PCB capacitors.

Municipal and Private Abatement

Eleven major water or sewage works were completed in 1981-82 at an estimated cost of $40 million (see Appendices).

In the Muskoka-Haliburton recreational area 635 private sewage systems were inspected on Morrison, Muskoka, Sunny and Salerno Lakes. In addition, Staff carried out 4,779 inspections involving the installation of septic tanks and holding facilities in the District of Muskoka.

By the end of 1981, a sewage works project was completed in the Town of Huntsville to serve the Hidden Valley area. The project opened the area for development and relieved the concerns of citizens with regard to water quality in local lakes.

Staff dealt with six private systems correction programs in the Town of Caledon at Alton, the Township of Scugog at Manchester and Greenbank, the Town of Pickering at Clairmont, the Township of Smith at Bridgenorth and the Township of Georgian Bay at Mactier. In the case of Mactier, the program was completed by the end of 1981.

**G. Mierzynski was appointed Acting Director of the Central Region while D.P. Caplice attended the Department of National Defence's Senior Officers Training Program from September, 1981 to August, 1982.*

In 1981-82, Staff inspected 1,578 communal water and sewage works and 377 sites receiving processed organic waste (digested sludge) from sewage works. They also conducted 1,190 inspections of waste disposal sites.

During the year, two waste sites were opened in the Townships of Otonobee and Mara. In Metropolitan Toronto, two major transfer stations were opened: the Scarborough Station with 1,000 tons a day capacity and the Unwin Station of Waste Management of Canada Incorporated in downtown Toronto with a 1,200 tons a day capacity.

In the summer of 1981, a public hearing was held on an application from York Sanitation Company Ltd. for approval of an expansion to their landfill site No. 4 in Whitchurch-Stouffville. Staff undertook extensive sampling of the area at the request of the York Regional Health Unit and concerned citizens. Meetings were also held with the Mayor, the Town's consultant, representatives of the citizens and the York Regional Medical Officer of Health. Reports were prepared and often hand-delivered to concerned parties.

In the spring of 1982, following a formal review of the proposal, the application for expansion was rejected.

Air Quality

During 1981-82, the Region maintained a network of 450 instruments to monitor air quality in 25 communities.

In Toronto, the significant improvements in air quality achieved during the 1970's were maintained.

The Toronto Air Pollution Index (API) exceeded the advisory level of 32 on three occasions during 1981. The maximum level reached was 43 on November 14, 1981.

The intensive lead monitoring program around secondary lead smelters and major lead users was continued. Asbestos monitoring on an intermittent basis was carried out in Peterborough and Lindsay.

Radioactivity levels were monitored in the vicinity of the Pickering Nuclear Generating Station and the Eldorado Nuclear Plant in Port Hope. Levels were generally similar to those monitored in downtown Toronto.

Fluoride surveys were continued around brick and glass plants in Toronto, Brampton and Missïssauga.

Water Resources

The Region maintained stream water quality stations at 207 locations, as well as 11 recording and 11 periodic stream flow stations, and 27 recording observation wells. The following Conservation Authorities assisted Ministry staff in the collection of water samples: South Lake Simcoe, Metropolitan Toronto Region, Credit Valley and the Halton Region.

The water quality monitoring program on Lake Simcoe was continued. During the ice free period, 10 lake stations plus one on the Lower Holland River were sampled. Additionally, a weekly winter monitoring program was conducted at four lake stations.

Staff conducted water quality assessments on 14 lakes within the District Municipality of Muskoka. The Muskoka District Planning Unit, in co-operation with the Region, carried out water quality assessments on an additional 35 lakes.

Seventy-six lakes were involved in the cottager's self-help program.

Information on pH and alkalinity levels was obtained for 75 lakes in the District Municipality of Muskoka and the Provisional County of Haliburton and the County of Victoria.

The Groundwater Group was involved in the environmental impact assessment of 56 abandoned, active or proposed municipal and industrial landfill sites, and sludge disposal sites. The most complex assessments were associated with the Keele Valley (Maple Pits), Stouffville and Seymour Township landfill sites. Twenty-nine groundwater quantity and 114 groundwater quality investigations were also carried out.

Planning and Approvals

The Environmental Planning Staff noted a decrease in plans circulated to the Region, although environmental assessment reviews and consultation increased slightly. Staff became increasingly involved in liaison with municipalities in environmental planning matters.

The following chart outlines the review activities of the Section:

Plans of Subdivisions Reviewed	386
Official Plans and Amendments	238
Quasi-approvals (Niagara Escarpment Commission, Parkway Belt, Pit and Quarry, etc.)	38
Environmental Assessments Reviews, Pre-submissions, Consultation	39

Under Section 40 of the Ontario Water Resources Act, Staff issued the following Water Taking Permits for the regulation of water use:

	Ground-water	Surface Water	Total
New Permits	12	17	29
Renewed Permits	13	45	58
Letters of Approvals	20	4	24
		Total	111

Staff also issued 383 Certificates of Approval for industrial emissions into the atmosphere and 16 Certificates for emissions to water.

Utility Operations

The Region operates 19 sewage plants and 14 water plants serving a population of 530,000. During the year, the Wasaga Sewage Treatment Plant was completed and placed in operation. In the case of the largest project – the South Peel water and sewage facilities – the sewer area was expanded to include the Towns of Bolton and Caledon. This step removed an effluent discharge to the Humber River.

Southeastern Region

Director: R.E. Moore

Industrial Abatement

During the 1981-82 fiscal year, Regional Staff investigated 779 complaints and 154 spills and carried out 1,583 routine inspections. These dealt primarily with odours, noise, gasoline and other contaminants affecting groundwater and wellwater quality.

Staff also helped to resolve several groundwater contamination problems involving gasoline and whey.

One Control Order was issued during the year to C.I.P. at Hawkesbury requiring the company to reduce its air emissions. C.I.P. anticipates spending $3.8 million on these pollution abatement measures.

Several industries in the Region undertook environmental control measures. The following is an outline of some of these activities:

- Kraft Foods installed a $1.6 million dollar wastewater treatment plant, involving an aerated lagoon, at Ingleside;
- Ivaco Limited installed an upgraded dust collection system at L'Orignal;
- Pfizer is neutralizing its effluent and BASF is improving the operation of its maleic hydride plant, thereby reducing BOD, in observance of Cornwall's sewer use bylaw;
- E. B. Eddy Forest Products commenced operation of its new sanitary sewage treatment plant at Ottawa;
- Chromasco at Haley's Station installed a baghouse to reduce dust emissions;
- Gloucester Sand and Gravel closed its landfill site due to leachate problems;
- Strathcona Paper installed a clarifier to reduce suspended solids levels in its effluent; and,
- Several quarries changed their blasting techniques to reduce noise levels.

Staff were also involved in the cleanup of 40,000 litres of oil from Deloro Stellite in Belleville from a nearby marsh.

Municipal and Private Abatement

A number of sewage and water treatment facilities in the Region were improved or expanded during the year (see Appendices).

Throughout 1981-82, much of the work of the Ottawa District Office's Municipal and Private Abatement Section involved private sewage systems. Staff received 514 applications for systems and issued 493 with Certificates of Approval. Use Permits were issued to 364. Other Offices in the Region issued two Certificates of Approval. Regional Staff also received and made recommendations on 436 severance applications.

During the year, the Ministry committed itself to a total expenditure of $6 million on 18 private sewage funding projects in Ottawa and Cornwall.

Two waste management sites, both in Pembroke Township, were closed. One site had reached capacity and the other, a very old site used for the disposal of digested sludge, did not have a Certificate of Approval.

Two new sites, in the Townships of North Crosby and East Hawkesbury, were opened. Approximately 21 sites were improved through the Ministry's Waste Management Improvement Program.

Three area waste management studies were undertaken for the Townships of Rockland/Clarence, Smith Falls and Sherwood, Jones and Hagarty.

The City of Cornwall Fire Department expanded its gas monitoring program to include testing of 31 establishments located in bark-filled areas known to be producing methane.

Approximately 259 complaints regarding wells were received and investigated by Staff. In addition, three well drilling educational programs were conducted for over 90 drillers.

With phosphorus removal facilities now operational in Perth, improvements are expected in the water quality of the Tay River, which has a high recreational usage. These improvements are expected to have a high degree of public perception.

Air Quality

The Region maintains telemetered, full-instrumented National Air Pollution Survey (NAPS) stations in Ottawa and Cornwall and a COH (coefficient of haze) and SO_2 (sulphur dioxide) continuous monitor at Kingston for ambient air monitoring. Source-oriented continuous monitors are also maintained at Hawkesbury for SO_2 from CIP, and at Cornwall for Total Reduced Sulphur from Domtar. These monitors are used to support Control Orders.

In the past year the Hawkesbury monitor was automated to provide reliable data with a minimum of technician service time. The Ottawa NAPS station will be fully automated during the summer of 1982.

Using the Regional computer access terminal, programs were developed to access air quality data stored in Downsview. Regional air quality data can now be retrieved in the form most appropriate for intended use with little time loss.

Water Quality

Groundwater Staff undertake approximately 130 investigations per year of groundwater contamination and/or interference complaints. The Region's aquifers are highly susceptible to contamination owing to the shallow soil cover and underlying fractured limestone. The typical contamination complaint involves one or more private wells contaminated with a hydrocarbon or salt. Groundwater interference problems are normally associated with dewatering operations at quarries.

In addition to complaint investigations, Staff completed 53 site inspection reports associated with sewage sludge spreading proposals and inspected 90 existing or proposed landfill sites.

Comprehensive water quality studies were completed and the findings reported for 104 of the Region's inland lakes.

The cottagers' self-help lake sampling program now includes over 90 cottager-sampled lakes. Three of these lakes have been sampled continuously for the past 10 years and sampling on 54 of the lakes has been ongoing for four or more years.

Regional sampling associated with the Acidic Precipitation in Ontario Study was carried out on 664 lakes over the past three years. The results indicate that 268 of these lakes are sensitive to acid precipitation. Three of these lakes have negative alkalinities and are considered to be acidified.

Staff collected fish for contaminants analyses from 89 bodies of water in Southeastern Ontario.

Routine river sampling is carried out at 93 locations throughout the Region as part of the Provincial Water Quality Network of water quality monitoring stations.

Two River Basin Management Studies are currently in progress. The South Nation River Basin Development Study funded under the Eastern Ontario Subsidiary Agreement is nearing completion. Its primary focus is on agricultural drainage and flooding with a lesser emphasis on water quality. The Rideau River Stormwater Management Study, supported by Lottario funds, is still in progress with the primary focus on bacteriological water quality as related to stormwater discharges.

The Bay of Quinte interagency study continues. It involves a comprehensive study of the response of the Bay to point source municipal phosphorus discharge reductions. Water quality conditions, as well as the fishery in the Bay, have significantly improved since municipal controls were implemented.

The bulk of the surface water river survey efforts have been directed towards assessing the impact of point source waste discharges and determining abatement requirements necessary to achieve Provincial Water Quality Objectives.

Planning and Approvals

The Unit examined 123 Official Plans and Amendments, 639 zoning bylaws and amendments, 107 subdivisions, and 29 miscellaneous planning policies. A total of 283 applications for approval under Environment Ontario's legislation and 262 applications related to programs of other agencies were reviewed. The number of environmental assessment reviews totalled 88.

Staff provided assistance to the Ontario Energy Board during its intervention into the National Energy Board hearings on the North Bay-Quebec border pipeline to be constructed by Trans Canada Pipelines. In addition, Staff were also involved in decision-making processes regarding the City of Kingston's sludge disposal, the City of Ottawa's snow disposal and Celanese Canada Inc.'s solid waste disposal facilities.

Laboratory Operations

The Kingston Regional Laboratory performed 106,000 chemistry tests and approximately 53,330 microbiological tests.

Procedural improvements were made in iron analysis and in nutrient analysis to permit smoother work flow and to reduce the technician time associated with these tests.

Quality auditing of drinking water supplies represents over 80 per cent of the workload of the Microbiology Lab. This is to ensure that the Ministry meets the needs of those responsible for disinfecting and distributing water supplies. The reporting and tabulating of results has been computerized to the point where monthly and annual tabulations are prepared within a few days of the end of the period in question.

Utility Operations

The Region operated 43 sewage projects, serving a total population of 194,900, and 24 water projects, serving a total population of 56,800.

Laboratory Services Branch

Director: G.C. Ronan

Analytical Test Production

The Laboratory provides input to sampling survey planning, expertise in data assessment, and a wealth of analytical data. Table 1 shows this year's test load summary compared to last year's.

Clients and Programs

The Laboratory's clients consist mainly of the Regions and the Environmental Assessment and Planning Division. Close to 65 per cent of the overall test production in the Ministry was in support of Regional activities.

The 1981-82 fiscal year saw a continuation of the high laboratory usage for major programs, including the Acidic Precipitation in Ontario Study (APIOS). Over 173,000 tests for anions, nutrients, metals, and microbiological parameters on a wide range of sample types (precipitation, fish, algae, and soil) were performed in support of this growing program.

Organic analyses continued to have a high profile and increased demand. Besides large-scale monitoring programs such as trihalomethanes in water and PAH's in air, extensive organic analysis was required in problem solving and contingency situations for Regional and Head Office groups. The water monitoring program for Niagara-on-the-Lake and St. Catharines was the largest single user of the Mass Spectrometer-GC system, while analysis of organics associated with landfill sites and industrial wastes monitoring were other major users of the increasingly sophisticated organic analysis capability of the Laboratory. Concern about toxic material issuing from the Niagara Falls, New York area also resulted in a high demand for tests of drinking water for dioxin, PCBs and Mirex.

To support the Ministry's investigations into the York Sanitation landfill site in Stouffville, Staff carried out approximately 25,000 tests at a cost of $250,000. The purpose of the testing was to obtain a profile of the contaminants present in the site by monitoring on-site observation wells and to check for any migration of contaminants into adjacent wells. Staff were also involved in corroborative testing by private labs and in extensive water quality monitoring of off-site private wells.

A new priority pollutants analytical testing system was used for the Stouffville study. It entails looking for approximately 90 trace organic compounds and 30 trace metals and inorganics to provide a comprehensive profile of the water quality.

TABLE 1: LABORATORY TESTLOAD SUMMARY
1981-82

Laboratory Sections and Regional Labs.	Chemistry (in thousands) 80/81	81/82	Microbiology (in thousands) 80/81	81/82	Total 80/81	81/82
London	180.6	176.9	49.8	50.3	230.4	227.2
Thunder Bay	75.7	89.1	30.0	30.1	105.7	119.2
Kingston	109.8	106.0	51.8	53.3	161.6	159.3
Regional Sub-Total	366.1	372.0	131.6	133.7	497.7	505.7
Inorganic Trace Contaminants	357.1	340.0			357.1	340.0
Water Quality	655.5	688.4			655.5	688.4
Pesticides (Scans)	8.7	10.0			8.7	10.0
Organic Trace Contaminants	91.8	78.0			91.8	78.0
Microbiology			128.9	151.0	128.9	151.0
Central Lab Sub-Total	1,113.1	1,116.4	128.9	151.0	1,242.0	1,267.4
TOTAL	1,479.2	1,488.4	260.5	284.7	1,739.7	1,773.1

In the Pesticides Section, a Finnegan Mass Spectrometer was acquired for dioxin analytical work. The new equipment lowers the Ministry's detection abilities to two parts per trillion (ppt) of dioxin in fish and to 0.02 ppt in water. The Section has developed one of the largest data bases in North America on the distribution of dioxin in Great Lakes fish.

The Water Quality Section saw a major change of focus from marshland studies to the acid rain program. Staff carried out close to 130,000 tests for acid precipitation as well as providing monitoring equipment to other Ministries to examine the effects of acid rain on remote lakes. In the spring of 1981, Staff also held a symposium on electron microscopy for 120 university and government scientists.

Energy dispersive x-ray fluorescence equipment was in use in the Inorganics Trace Contaminants Section by early 1982. The equipment is used to detect trace levels of metals in air particulates. The Section also purchased an inductively coupled plasma emission spectrometer which permits staff to test for 24 metals simultaneously on a wide variety of sample materials.

In addition, the Section's regular activities shifted from routine monitoring to acid rain monitoring, especially soils and precipitation.

Staff improved the analytical methods for measuring dry deposition and developed a quality assurance program for dealing with the long-range transport of pollutants.

The Laboratory continued to use fish as an indicator of organic and inorganic water pollution. While demands for the analysis of mercury and PCB in fish declined, the analysis of metals such as aluminum, lead and zinc were in increasing demand. Requests for lead analysis in air, water, and vegetation saw a remarkable increase this year, as nearly 50,000 lead tests were completed.

Metals other than lead that had a high demand rate (over 1500 tests each) were zinc, copper, nickel, iron, chromium, aluminum, mercury, arsenic and selenium.

The Microbiology Section released a joint report with the federal government and university groups on the incidents of viruses in the bathing waters of Conservation Areas. Studies were also conducted with other agencies to develop a data base on the mutagenicity of water supplies adjacent to the landfill site in Stouffville.

Major surveys were carried out in Dorset, the headquarters for APIOS, which included microbiological work on the decomposition of leaf litter and preliminary work on the effects of pH on nitrogen and sulphur cycles in surface and lake waters.

In addition, Staff continued to use mobile labs to support the Great Lakes studies on inter-connecting channels in Sault Ste. Marie.

The Biohazards Unit expanded the range of tests it is able to carry out for mutagens in water supplies and surface waters. Several new procedures were brought on-line to provide an improved validation for the Ames Test, which indicates the presence of mutagens in water.

Many samples resulted in extensive analytical reports which were used as court evidence, the basis for insurance claims, or supporting information for Ministerial Orders.

Highlights of these studies included:

- Laboratory analytical support identified corrosive air particulates as emanating from a specific point source. Several hundred owners of damaged automobiles received financial compensation.
- Analysis of industrial waste samples were used as supporting evidence in obtaining convictions of waste haulers who were operating illegally; and,
- Photomicrographic evidence provided by the Laboratory resulted in the conviction of the proprietor of a corn grinding operation, which was causing a severe dust problem for neighbours.

Several special ventures were undertaken by the Laboratory this year, including the purchase and design of the Organo-Tracker Unit, which visits sites and collects samples; the construction by the Water Quality Section of a completely self-contained mobile laboratory to support various field programs; and, a major $400,000 major expansion to the Biohazards Lab, which incorporates additional safety features, isolated air supplies and much needed space.

Administrative Services

The initial implementation of the Laboratory Information System (LIS), a computerized data storage and processing system, began in the fall of 1980. At the end of the fiscal year, approximately 95 per cent of the samples submitted to the Central Laboratory were being handled by the LIS.

TABLE 2: TEST PRODUCTION 1976-82

Year	Regional Laboratories	Toronto Laboratory	Laboratory Services Branch
1976/77	378,000	1,272,000	1,165,000
1977/78	420,000	1,360,000	1,178,000
1978/79	440,000	1,262,00	1,702,000
1979/80	446,000	1,144,000	1,159,000
1980/81	498,000	1,242,000	1,740,000
1981/82	506,000	1,267,000	1,773,000

finance and administration division

Executive Director – G. E. Higham

This Division provides a complete range of support services and control functions to the Operating Divisions required for the efficient operation of the Ministry.

Financial and Administrative Services Branch

Director: W. D. Wood

In 1981, the Branch acquired six computer terminals to increase its efficiency in handling the entire financial program of the Ministry. The new system greatly reduces the time required for the preparation of financial reports and for the payment of documents, such as invoices and travel claims. In addition, 95 per cent of all coding errors are now caught immediately.

The development and implementation of the computerized system, as well as the preparation of a user's guide and the retraining of staff were handled internally.

Energy Savings

Over 30 Ministry cars were converted to propane consumption during the 1981-82 fiscal year. The maintenance and operating expenses of these cars were found to be less than that for standard gas propelled vehicles and their emissions are cleaner. Fuel consumption remains the same.

The Ministry's sewage and water treatment plants, through their pumping operations, use approximately 40 per cent of the electrical energy that is consumed by Ontario Provincial Government operations. Efforts are being made to install the most efficient pumps available to minimize peak demand changes and, to pump when the demand for electrical energy by other users is low. Wherever feasible, Environment Ontario has begun to convert heating in the plants from oil to natural gas.

Capital Financing Office

Co-ordinator: C. D. Mialkowsky

Water and Sewage Works

Financial management was provided for 759 projects under agreements with municipalities and industry. The following table is an analysis of the financing of 486 Term Loan Agreements and for 273 Provincially owned works under Service Agreements.

Investment in Water and Sewage Works as of March 31, 1982
(at cost less recoveries)

	1982	1981
	($ millions)	
Term Loan Agreements		
Water Works	38.1	38.7
Sewage Works	54.8	55.9
Service Agreements		
Water Works	313.8	306.8
Sewage Works	710.3	715.0
Total Investment	1,117.0	1,116.4

In most cases, the water and sewage plants were also operated by the Ministry. The statutory and contractual activities in this area include: conducting service rate reviews (100 in 1981-82); maintenance of accounting records; the reporting of financial aspects of various water and sewage projects as required by agreements and legislation; assisting municipalities in implementing billing and collecting procedures under various service and term agreements and assisting them in bylaw reviews when requested. The gross revenue generated by these activities in 1981-82 amounted to $92.3 million.

Cost Sharing Agreements and Grants

Administration of claims under the Canada/Ontario cost sharing agreements resulted in reimbursements of expenditures of $1.4 million.

Provincial assistance on projects under Service Agreements amounted to $12.6 million. Direct grants to municipalities amounted to $59.2 million. In addition, claims processed under the Community Services Contribution Program amounted to $51.1 million.

Systems Development

Manager: G. Scanlon

In 1981-82, this Section, in conjunction with User Branches, worked on a wide variety of projects. The following are brief descriptions of some of these:

- New Air Quality Telemetry System. A study was initiated to determine the feasibility of developing a new Province-wide system.
- Laboratory Information System (LIS). Modifications were made to enhance the performance of the system.
- Regional Distributed Data Processing System (RDDPS). Four mini-computers were acquired for the Southern Regions to form part of the overall Regional distributed system.
- Industrial Monitoring Information System (IMIS). A new system was developed for the six Regions to assist them in their pollution abatement activities. Implementation is planned for the up-coming fiscal year.
- New Industrial Waybill Monitoring System. A study was initiated to determine the feasibility of developing a new system to meet the requirements of upcoming legislation.

Internal Audit Branch

Director: E.F. Heath

During the year, the Branch carried on with the implementation of the comprehensive auditing program and continued its multi-year program of conducting operational and financial audits in the Ministry offices and plants throughout the Province.

In addition, 375 audits were performed on three grant programs administered by the Ministry of the Environment, namely the C.S.C.P. Grant Program, the Direct Grant Program and the Grants for the Repairs and Renewal of Private Systems Program. These programs are designed to provide financial assistance to municipalities and agencies for sanitary sewerage and water system projects throughout the entire Province. The audits are performed mainly in the offices of the municipalities.

The total expenditure for these grants for the fiscal year 1981-82 was $108.8 million.

Information Services Branch

Director: R.J. Frewin

Acid Rain

In support of the Ministry's acid rain program, the 27-minute documentary film "Crisis in the Rain" was completed and in wide circulation in Canada and the United States by June of 1981.

By the end of the fiscal year, the film had been viewed in private showings and on cable and public TV broadcasts by more than one million people in both Canada and the U.S.

The Ministry provided prints of the film to the Canadian Consulates in New York, Chicago, Minneapolis, Detroit, Buffalo, San Francisco, Los Angeles, Cleveland and the Canadian Embassy in Washington for showings to environmental groups concerned about acid rain in eastern North America. Prints of the film have also been placed by the Ministry in some 35 central libraries across Ontario where the print is available to the public. It is also available to the public from two commercial film distribution companies retained by the Ministry for this purpose.

A unique and effective communications activity was the series of tours to the Muskoka/Haliburton Region, Toronto and Ottawa arranged by Environment Ontario in co-operation with the Federal Department of External Affairs and Environment for representatives of the U.S. media, for staff advisors to senators and congressmen engaged in reviews of U.S. environmental legislation, and for delegates from industries and from States concerned about acid rain.

During the summer, two information "open houses" on acid precipitation were staged at the Ministry's acid rain research centre in Dorset. Over 1,500 people attended. A similar "open house" at the Kortright Centre near Woodbridge attracted 1,000 visitors.

Public Meetings

During the year 19 public meetings and information sessions attended by 2,000 people were conducted across the Province, as part of the Ministry's public participation policy relating to Control Orders.

Education

Under the Ministry's Environmental Explorations Program, six university students visited 161 schools, resident camps and provincial parks across Ontario. The program, which runs for 14 weeks during the summer is designed to promote an interest and a concern for our environment and to provide appropriate information to students and adults. Approximately 54,000 people participated in the program. In 1982, a bilingual team conducted this special program in Francophone schools and community facilities.

For the fifth year, the Ministry sponsored an environmental workshop for more than 40 special education teachers at the Bolton Outdoor Education Centre, including advanced level courses for teachers who had attended previous workshops.

The 28th Ontario Industrial Wastes Conference, co-ordinated by the Branch for the Ministry was attended by over 570 delegates.

Special Projects

The Branch staged the following special activities:

- Operation Skywatch. Volunteers from the international organization of women pilots, the "Ninety-Nines", flew patrols along the shores of the Ottawa and St. Lawrence Rivers and the Great Lakes, as part of the Ministry's environmental detection and surveillance activities.
- Displays and Exhibits. The Branch participated in six major exhibits across the Province and provided seven acid rain displays.
- Films. Approximately 15 Ministry films were used in 2,200 showings before a total audience of 86,137 persons. In addition, nine films were booked for 81 showings on television to a total audience estimated at 2 million.
- French Publications. Fourteen of the Ministry's major publications and more than 50 per cent of the information fact sheets are now available in French. In addition, 76 educational publications, including 14 lesson sets, are available in French to teachers.
- Ontario's Fish Testing and Information Program. For the fourth consecutive year, the publications "Guide to Eating Ontario Sport Fish" (Northern Ontario, Southern Ontario and Great Lakes editions) were published. Designed to provide the angler and consumer with the most up-to-date information on possible trace contaminants such as mercury, PCB, mirex and DDT in sport fish, these guides contain test data on over 70,000 fish collected from over 1,100 rivers, lakes and parts of the Great Lakes. Over 200,000 copies of the bilingual booklets were distributed free of charge via government offices and by Brewers Retail and LCBO outlets in vacation areas.

Library Services

In addition to its book-lending and research activities, the Section conducted 1,237 computer searches for scientific material, as required by Ministry staff.

The public reading room in the main library was used by over 1,800 people, most of whom were engaged in research.

Personnel Services Branch

Director: R.E.B. Burns

The Branch completed the initial research stage of the manpower planning program. The program is aimed at developing the skills of future managers and at making employees more aware of the career opportunities within the Ministry.

Environment Ontario held its first career development assessment program for 12 female employees in the fall of 1981. Afterward, each candidate was interviewed to discuss the session and to set new work assignments, which would further career goals.

During the fiscal year, a series of half day orientation programs were held for employees in Toronto, in the Hamilton Regional and District Offices and in the Cambridge District Office. Ministry activities and working conditions were discussed. Other offices will be visited in the upcoming year.

A health and safety handbook was prepared and distributed to all employees.

The Training and Certification Section conducted 57 courses, workshops and seminars, which were attended by 816 Ministry and 998 non-Ministry personnel.

French Language Services

Co-ordinator: N. Vakharia

In 1981, 78 positions requiring bilingual capability were identified and designated. Most of these positions are located in the Southeastern and Northeastern Regions, which have a high concentration of French-speaking people.

Forty-three staff members participated in French-language training programs. Courses, emphasizing environmental terminology, were developed and offered in Sudbury, Cornwall and Toronto.

In the fall of 1981, representatives of various government agencies, including Environment Ontario, visited Franco-Ontarian communities across the Province to promote the French-language services provided by the Government and to make the public aware of the existing bilingual capability in regional offices.

The Environmental Protection Act, The Environmental Assessment Act, educational materials, a film and publications on acid rain were produced in French.

boards and commissions

The Waste Management Advisory Board

Chairman: R.H. Woolvett

The Waste Management Advisory Board was established in 1975 by Order-in-Council to provide advice to the Minister of the Environment on a wide-range of matters relating to the management of waste in Ontario. The Board's Terms of Reference include reviewing and advising the Minister on priorities for action by the Province and on commenting on the effectiveness of existing programs and activities.

During the 1981-82 fiscal year, the Waste Management Advisory Board was comprised of nine members. Nine Board meetings were held over a period of 16 days. In addition, 18 meetings were held by the Board's Committees.

The Board was also involved with the following projects throughout the year:

- The development of guidelines for recovering used motor oil from do-it-yourself oil-changers;
- The development of teaching material for Grades nine to thirteen;
- An update of the Advisory Board's 1976 report, "Urban Solid Waste Generation in Ontario", regarding per capita solid waste generation in Ontario's municipalities;
- A pilot program to educate residents on reducing the amount of waste they generate and on measuring their degree of effectiveness;
- The development of a system to keep track of the flows and recovery costs of secondary materials reclaimed through source separation programs as well as to monitor changes in demand, market prices, costs and the revenues associated with these projects;
- A study to determine the economic benefits of increased material recycling arising from source separation in terms of job or business creation and resource savings;
- A study to determine the methods of increasing the recovery and recycling of waste glass in Ontario;
- Continued monitoring of container use trends for carbonated soft drinks;
- The development of a Board position paper on sanitary landfill in the Province;

- The formation of an ad hoc committee to study, in conjunction with the Pesticides Advisory Committee, various alternatives for handling used pesticide containers; and,
- Partial funding of an Ontario-wide telephone service to provide information on recycling activities throughout the Province.

In addition, the Second Environmental Packaging Design Competition was successfully concluded with over 30 submissions. The competition is open to full-time students enrolled in undergraduate courses in Ontario's post secondary schools. Its basic purpose is to generate greater interest in the environmental implications of packaging.

The Environmental Assessment Board

Chairman: B. E. Smith

The Environmental Assessment Board conducts public hearings on environmental issues under the following legislation:

Legislation	No. of Hearings in 1981-82
The Environmental Assessment Act	2
The Ontario Water Resources Act	10
The Environmental Protection Act	9
Consolidated Hearings Act	5

At the end of the 1981-82 fiscal year, the Board had 18 members.

The Board also publishes its own annual report, which is available upon request.

Farm Pollution Advisory Committee

Chairman: O. Crone

Consisting of four professional farmers, this Committee provides objective assessments of farm environmental situations as requested by Ministry officials. The Committee visits farms to investigate complaints and make recommendations concerning manure storage and spreading, cultivation, yard drainage and ventilation of livestock and poultry buildings.

In 1981, the Committee investigated five hog farms and one cattle feed lot.

The Pesticides Advisory Committee

Chairman: Dr. G. S. Cooper

The Pesticides Advisory Committee recommended a number of regulatory changes which are reflected in Regulation 751 Revised Regulations of Ontario, 1980; evaluated the environmental impact, toxicity and hazard of two new or previously non-classified active ingredients; evaluated 194 newly registered pesticide products and recommended for each a classification for storage, sale and use in Ontario. In addition, 583 obsolete pesticide products declared by the registrants to be no longer available on the market were recommended for removal from the active list of scheduled products.

Thirty-three research proposals were received, of which 25 were funded by the Ministry through the Committee to a total of $291,680. A two-day seminar, attended by over 70 delegates, was held in January of 1982 so that grant recipients might report their findings. A research report is published annually.

Nineteen committee meetings were held during the year and several scientific reviews were carried out. An assessment of the fungicide captan was submitted to the federal Consultative Committee on IBT Pesticides. All Provincial publications dealing with pesticides were reviewed.

Royal Commission on the Northern Environment*

Chairman: J. E. J. Fahlgren

In 1981-82, the Commission published two major project reports. The first was "The Economic Future of the Forest Products Industry in Northern Ontario". This study identifies major problems and prospects facing important sectors of the Northern Ontario forest products industry, such as markets, manufacturing costs, wood supplies and economic prospects.

The second report, "The Road to Detour Lake: An Example of the Environmental Assessment Process in Ontario", is a case study documenting the process of the application of the Environmental Assessment Act to the access road to the Detour Lake mine site.

**As of January 1, 1982 the administrative responsibilities for the Commission were assumed by the Office of the Attorney General of Ontario.*

The Environmental Appeal Board

Chairman: L. C. DeGroot

Established under the Environmental Protection Act, 1971, the Environmental Appeal Board provides an appeal mechanism for persons affected by certain decisions made by the Ministry of the Environment or local health units. The Board consists of 13 part-time members, including the Chairman, from various occupations and parts of the Province.

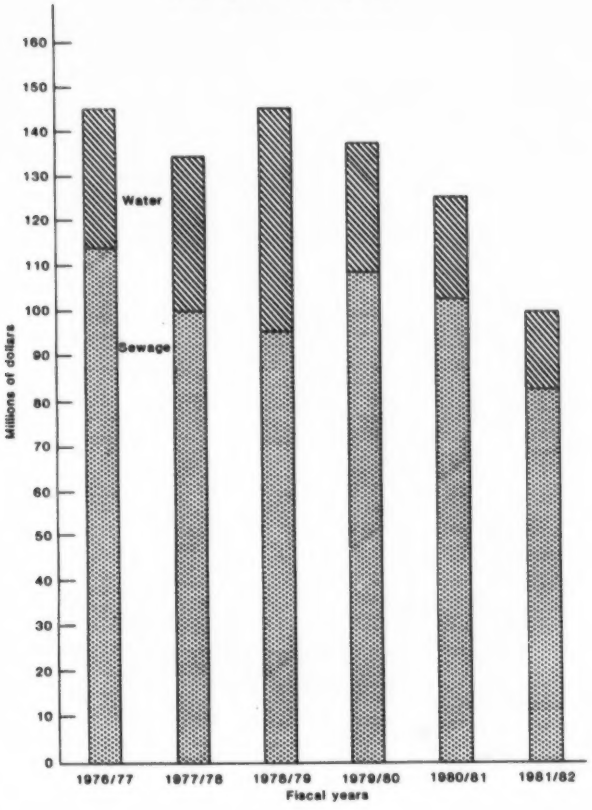
In 1981-82, the Board received 39 valid appeals. Approximately 66 per cent of the appeals concerned decisions of local health units on private sewage systems. The remaining appeals resulted from Ministry of the Environment decisions regarding waste disposal sites, waste management systems, waterworks and air pollution control.

The Board held 36 days of hearings in 1981-82. It resolved 16 of the appeals received during the year as well as five appeals from the previous year. At year-end, decisions remained to be issued or hearings held on 12 appeals.

appendices

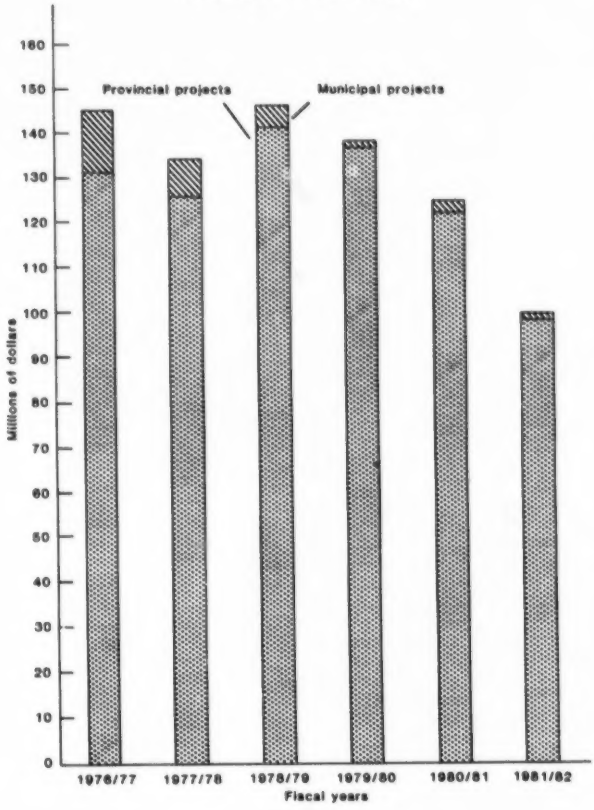
CAPITAL CONSTRUCTION PROGRAM

Annual Total Expenditure by Project Type (1976/77 - 1981/82)



Graph 1

Annual Total Expenditure by Class (1976/77 - 1981/82)



Graph 2

Annual Total Expenditure by Project Type

Fiscal Year	Sewage	Water	Total* ($ millions)
1972/73	54.4	26.0	80.4
73/74	68.4	13.1	81.5
74/75	94.8	32.0	126.8
75/76	114.8	40.1	154.9
76/77	114.8	31.2	146.0
77/78	101.0	34.1	135.1
78/79	96.6	50.7	147.3
79/80	110.6	28.9	139.5
80/81	101.9	21.7	123.6
81/82	82.9	16.6	99.5

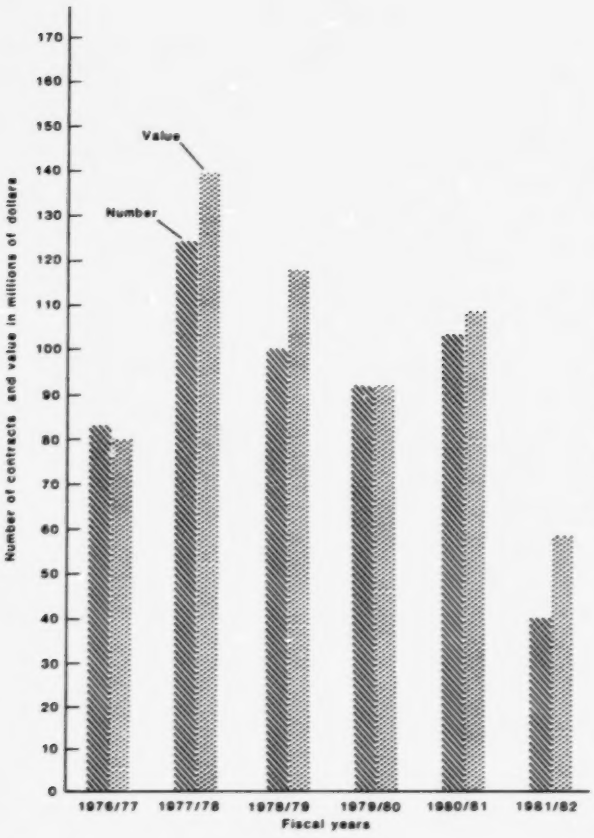
Annual Total Expenditure by Class

Fiscal Year	Provincial Projects	Municipal Projects	Total* ($ millions)
1972/73	77.6	2.8	80.4
73/74	75.5	6.0	81.5
74/75	115.4	11.4	126.8
75/76	145.2	9.7	154.9
76/77	131.8	14.2	146.0
77/78	127.0	8.1	135.1
78/79	142.9	4.4	147.3
79/80	138.3	1.2	139.5
80/81	121.7	1.9	123.6
81/82	98.0	1.5	99.5

*Includes costs of engineering, property and miscellaneous items as well as contract prices.

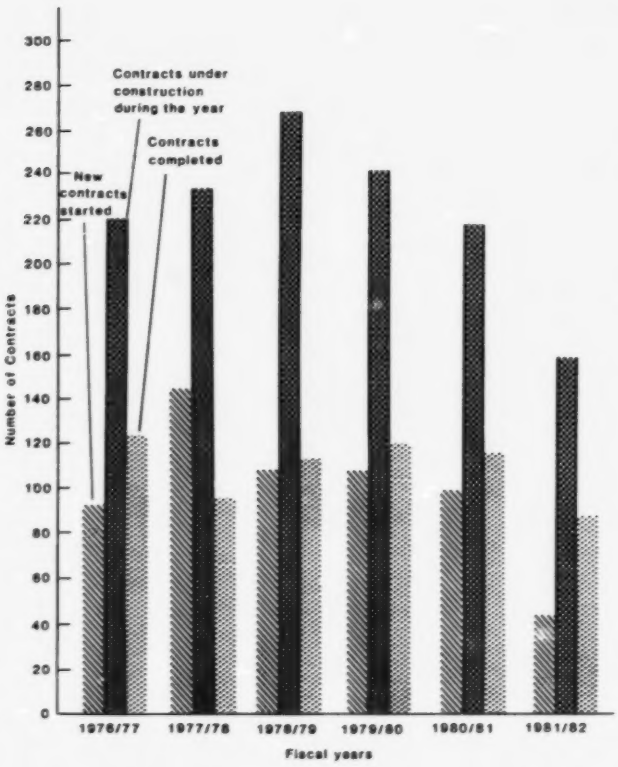
CAPITAL CONSTRUCTION PROGRAM

Number and Value of Contracts Tendered Annually (1976/77 - 1981/82)



Graph 3

Annual Volume of Activity (1976/77 - 1981/82)



Graph 4

Number and Value of Contracts Tendered Annually

Fiscal Year	Number	Value ($ Millions)
1972/73	99	72.4
73/74	108	91.3
74/75	92	84.1
75/76	153	167.6
76/77	84	79.6
77/78	125	140.5
78/79	99	116.3
79/80	93	93.0
80/81	104	110.2
81/82	40	58.7

Annual Volume of Activity

Fiscal Year	(Number of Contracts) Started	Under Construction	Completed
1972/73	88	166	92
73/74	108	182	82
74/75	102	202	93
75/76	153	262	139
76/77	92	215	124
77/78	145	236	96
78/79	109	249	115
79/80	110	244	122
80/81	97	219	113
81/82	43	149	85

Northwestern Region
Sewage Treatment Projects
Completed in 1981-82

Location	Project	Value (in $ millions)	Provincial Contribution Grant or Subsidy
Improvement District of Balmertown	secondary sewage treatment plant	1.948	Up-front .584
Township of Marathon	sewage treatment plant	2.676	Up-front .748

Northeastern Region
Water and Sewage Projects
Completed in 1981-82

Location	Project	Value (in $ millions)	Provincial Contribution Grant or Subsidy
Little Current	pollution control plant, expansion	est. 4.891	Up-front 2.865
Hearst	water treatment facilities, expansion	3.758	Provincial 2.818
Moonbeam	well and water treatment facilities	.350	MNA .350*
Kapuskasing	Provincial sewage works	6.989	.635

**Ministry of Northern Affairs Grant*

Southeastern Region
Water and Sewage Projects
Completed in 1981-82

Location	Project	Value (in $ millions)	Provincial Contribution Grant or Subsidy
Town of Almonte	well improvements	.2	
Town of Hawkesbury	water treatment plant, improvements	.933	up-front .129
Town of Perth	phosphorus removal facilities	.3	
Village of Iroquois	sewage treatment plant, expansion	1.502	Direct Grant .396

Southwestern Region
Water and Sewage Projects
Completed in 1981-82

Location	Project	Value (in $ millions)	Provincial Contribution Grant or Subsidy
Harwich Township (Beach)	water system	1.273	Provincial .940
Village of Brussels	sewage system	3.755	Provincial 1.889
Village of Blyth	sewage system	3.321	Provincial 1.886
Village of Ailsa Craig	sewage system	2.574	Provincial 1.434
Village of Thamesville	sewage works	3.444	Provincial 2.142
Village of Thamesville	water works	1.643	Provincial 1.232
Village of Tara	sewage system	2.281	Provincial 1.460
Township of Blandford-Blenheim	sewage system	2.229	1.278
Plattsville	water works	1.159	.869
Town of Parkhill	sewage works	3.448	Provincial 2.238
Town of Mitchell	water system, expansion	.553	Up-front .034
Village of Milvertown	lagoon system, extension	.722	Up-front .255
Town of Kincardine	sewage system	.465	Up-front .058
Village of Grand Bend	lagoon	6.1	Provincial 3.980
Town of Durham	pollution control plant, expansion	1.475	.745
City of London	nitrification facilities	2.362	Up-front .270
City of Windsor	pollution control plant	7.933 phase II 8.857 phase III	Up-front .993 Up-front 1.110
Town of Hanover	pollution control plant, expansion	4.857	Up-front 1.581
Town of Walkertown	sewage plant, expansion	1.321	Up-front .517

West Central Region
Water and Sewage Projects
Completed in 1981-82

Location	Project	Value (in $ millions)	Provincial Contribution Grant or Subsidy
City of Brantford	sewage treatment plant, expansion	10.9	1.367
Township of S. Dumfries (St. George)	sewage treatment plant and sewer system	2.9	1.236
Regional Municipality of Waterloo (New Hamburg)	sewage treatment plant, expansion	1.7	.2
Regional Municipality of Niagara (Fort Erie)	water treatment plant	5.5	.781
(Welland)	water treatment plant	3.9	.528
Regional Municipality of Haldimand-Norfolk (Jarvis and Hagersville)	water supply	4.8	.715
Township of Delhi (St. Williams)	water supply system, upgrade	.1	.07

Central Region
Water and Sewage Projects
Completed in 1981-82

Location	Project	Value (in $ millions)	Provincial Contribution Grant or Subsidy
Town of Huntsville (Hidden Valley)	sewer system	1.667	1.150
Town of Huntsville (Hidden Valley)	water supply	1.747	1.019
Village of Brighton	water supply, extension	.759	up-front .090 M.T.C. .097*
Township of Brock (Beaverton)	sanitary sewers and lagoons	2.178	up-front 1.483

(Continued on following page.)

Central Region Cont'd

Location	Project	Value (in $ millions)	Provincial Contribution Grant or Subsidy
Township of Brock (Sunderland)	sewer system lagoons	2.234	up-front 1.499
Town of Newcastle (Bowmanville)	Darlington Sewage Treatment Plant	9.346	restructured grant .342
Region of York (Newmarket)	water storage facility	.837	up-front .108
(King City)	elevated storage facilities	.640	up-front .089
Township of Essa (Angus)	sewage system	7.068	Provincial 4.445
Town of Midland	sewage treatment plant, expansion	5.436	up-front .409

**Ministry of Transportation and Communications Grant*

Retirements

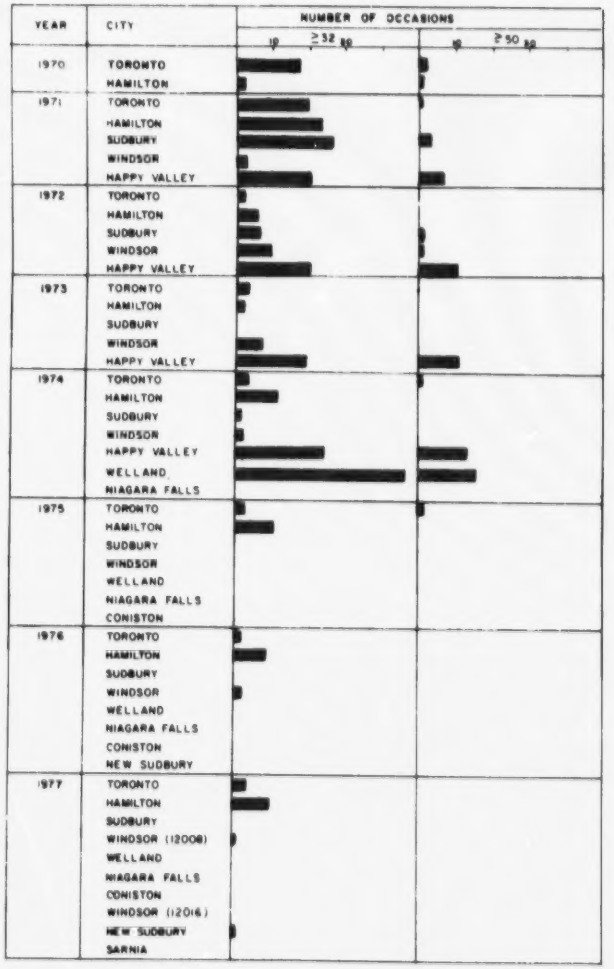
The following people retired from the Ministry of the Environment in 1981-82. The Ministry deeply appreciates their years of service and wishes them well in future endeavours.

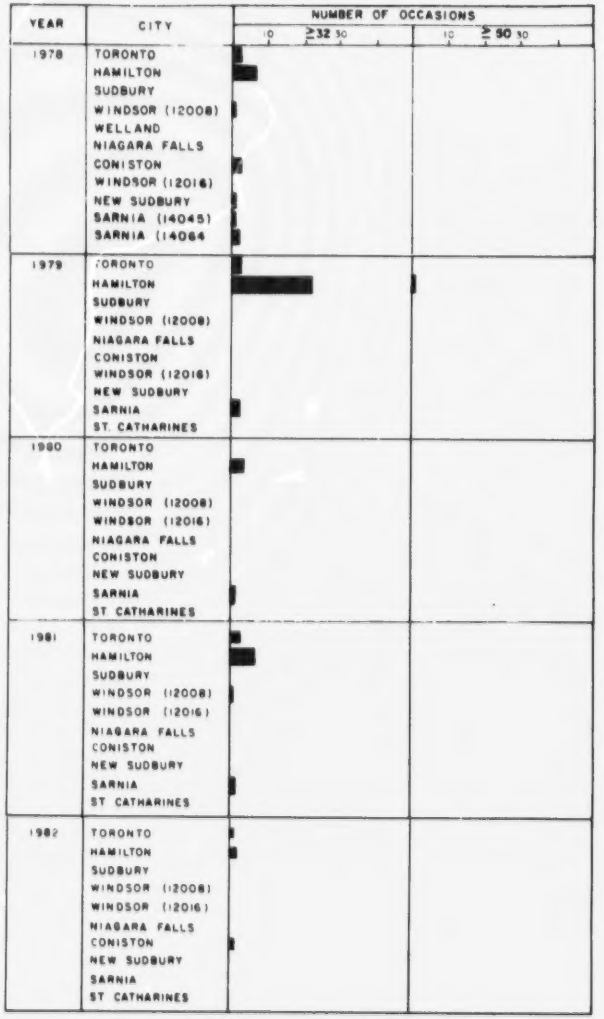
Name	Position	Location
	Over Eight Years	
Mr. L. E. Way	Senior Environmental Officer	West Central Region
Mr. J. E. Mayman	Operator	Lake Huron Water Supply System
	Over Ten Years	
Mr. J. F. Kent	Environmental Officer	Southeastern Region
Mr. J. Hrasko	Laboratory Technician	Central Laboratory
Mr. D. S. Aitkens	Manager, Technical Support	Southeastern Region
Mr. G. H. Boileau	Senior Maintenance Technician	Cornwall Sewage Treatment Plant
Mr. W. Williamson	Manager	Waste Management Branch
	Over Fifteen Years	
Mrs. L. M. Newman	Senior Data Control Clerk	Air Resources
Mr. N. H. Partridge	Senior Stockroom Clerk	Central Laboratory
Mrs. A. T. Anderson	Administrative Assistant	Environmental Assessment and Planning
Mr. N. Strutt	Accommodations Officer	Financial and Administrative Services
	Over Twenty Years	
Mr. H. W. Bradshaw	Caretaker	Brantford Sewage Treatment Plant
Mr. E. L. Percival	Chief Operator	Simcoe/Waterford Sewage Treatment Plant
Mr. J. W. Wardle	Environmental Technician	Central Region
	Twenty-five Years	
Mr. M. Lubinski	Approvals Engineer	Environmental Approvals
Mr. B. Stundzia	Water and Precipitation Supervisor	Central Laboratory
Mr. W. Surh	Senior Technician	Central Laboratory
Mr. Y. T. Lambert	Director, Finance/ Administration	Royal Commission on the Northern Environment

ONTARIO'S AIR POLLUTION INDEX

DATE STARTED

TORONTO	MARCH 23, 1970
HAMILTON	JUNE 15, 1970
SUDBURY	JANUARY 16, 1971
WINDSOR	MARCH 19, 1971
HAPPY VALLEY	MAY 13, 1971 (CLOSED JAN 1975)
WELLAND	JAN 1, 1974 (CLOSED OCT 26, 1978)
NIAGARA FALLS	NOVEMBER 1, 1974
CONISTON	FEBRUARY 18, 1975
NEW SUDBURY	MARCH 1, 1976
SARNIA (14049)	DEC 1, 1977 (CLOSED AUG 30, 1978)
SARNIA (14064)	SEPTEMBER 1, 1978
ST CATHARINES	SEPTEMBER 14, 1979





MINISTRY OF THE ENVIRONMENT

January 1, 1983